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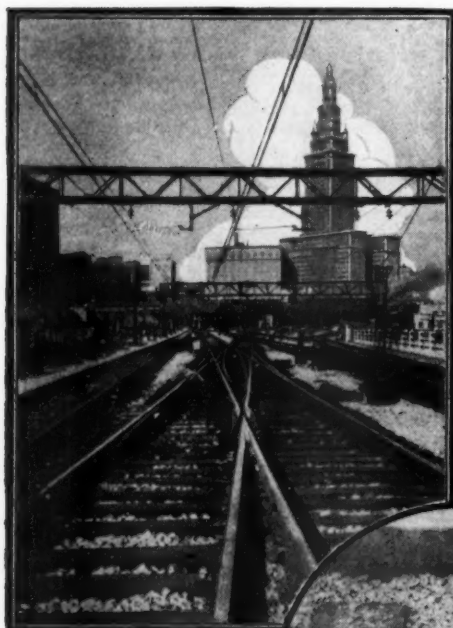
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Important Action by Brotherhoods and Railways

DEVELOPMENTS that occurred last week may prove to be very important in the history of the railroads. On November 19, meeting in Chicago, the general chairman of the five great brotherhoods of train service employees adopted resolutions condemning every form of government subsidy and discrimination in behalf of the competitors of the railways by waterway and highway. On November 20 the Association of Railway Executives, meeting in New York, put into definite form and made public the consensus of opinion of railway managers regarding the various government policies that must be adopted to put the railroad industry on a basis of economic equality of opportunity with its competitors, and to enable it to make adequate earnings. Both the train service brotherhoods and the railway executives also demanded that the same regulatory restrictions be imposed upon pipe line carriers as are imposed upon railways.

Thus, within two days, railway executives and the most influential railway labor organizations in the country announced that they no longer intend to allow politicians and selfish business interests, almost without resistance, to help themselves to the taxpayers' money and use it to divert traffic and earnings from the railways and deprive railroad men of their employment. The Brotherhood of Railway Clerks previously had adopted resolutions similar to those of the train service brotherhoods, and it seems reasonable to anticipate that other organizations of railway employees will do likewise. The question, "What do the railways want?" will no longer go unanswered. The leaders of the industry have joined in a statement, setting forth its condition, and the measures which in their opinion must be adopted to accord it fair treatment and save it from disaster. Some of the most important labor organizations also have gone on record in favor of several of the same measures for the purpose of protecting railway employees from continuance of the injustice of being deprived of their employment by the unfair action of their own government.

A Struggle for Fair Treatment

The struggle for fair treatment of the railways and their employees probably will be a hard one, but it

actually has been commenced. Their demands are entirely reasonable. They ask nothing but what is necessary to get for them as good treatment from the state and national governments as is given to other industries and their employees.

Every other industry opposes government competition with it. Why, then, should the national government, at the cost of the taxpayers, operate a barge line on the Mississippi river system in direct competition with the railways and their employees? Every other industry opposes government subsidizing of competition with it. Why, then, should the state and national governments subsidize competition with the railways and their employees on both waterways and highways? The Interstate Commerce Commission regulates all the rates of the railways, which must be published and adhered to without unfair discrimination. Why, then, should competing carriers by water and highway be free to make all their rates, excepting those made in connection with the railways, as they like, and practice every discrimination that they please?

Our governments have accepted the economic view that high wages and the eight-hour day in the railroad industry are desirable. How, then, can it be desirable for our governments to aid in subjecting railway employees to the competition of men operating both boats and motor vehicles who are required to work much longer hours and are paid much lower wages than railway employees? How can business men have the effrontery to criticize the giving of subsidies to the farmers under the Farm Relief act, and at the same time demand and defend the giving of subsidies to shippers in general through the payment by the government of large parts of the costs incurred in transportation by highway and waterway?

We are supposed to be especially committed in this country to the public policy of treating alike the private capital invested in, and the persons employed by our various industries. In no country outside of Russia however, is any industry and its employees being treated with such utter disregard of what we profess to accept as sound economic principles and fair policies as are our railroads and their employees. The confiscation of railroads formerly was confined to the regulation

of their rates. Now it includes the subsidizing of unregulated competition to take away their traffic. To direct confiscation has been added indirect confiscation. To confiscation of railway capital has been added confiscation of railway workers' employment. To destruction of the rights of those who invest has been added destruction of the rights of those who work. To make the confiscation practised upon the railways and their employees as complete as practicable there has been included confiscation from the general taxpayers and private motorists of the highways they have built by allowing commercial operators of motor coaches and trucks to handle passengers and freight on terms and in ways that are destructive of the rights both of private motorists and of railways and their employees. At last railways and their employees are rising against the abominable unfairness of the government policies to which they have been subjected; and in their uprising against prevailing highway policies and practices they promise to have the support of private motorists.

Attitude of Business Men and Politicians

We believe that the sane business men of the country will rejoice because of the stand taken last week by the railways and the train service brotherhoods. Intelligent business men have been feeling increasing alarm regarding the drift of the railroad industry toward disaster, and will support the program adopted by the railways and the train service brotherhoods. Many politicians will regard with dismay these recent developments, and especially the policies being adopted by railway employees' organizations. They have become accustomed to believing that any effort they might make to promote the ruin of the railroad industry would be resisted only by railway managers. But conditions have changed. The relations between the railways and their employees have altered accordingly. Many thousands of employees have come to a realization that in every important respect their interests are now identical with those of the railways. They are injured far more by losses of railway traffic than are the railways themselves. They know it, and they have become tired of tolerating politicians who pander to them during political campaigns and between campaigns promote policies that reduce the number of railway jobs.

The future of the railroad industry looks brighter now than it has for a long time. Traffic, earnings and employment are still very unsatisfactory, but a real campaign has been started to improve them—a campaign in which it will not be true, as it has been too long, that facts and reason will be comparatively ineffective because wholly unsupported by political influence. Railway employees, their families and friends have an enormous political influence, and if they and their leaders use it promptly and energetically, as they should, to get for the railways and themselves a square deal they will soon begin to be recognized as an industry and as citizens who, like other industries and citizens, have some interests and rights that should be safe from confiscation.

A Responsibility for Association Leadership

ONE of the outstanding characteristics of the American railways and one of the primary reasons for the remarkable development in the technique of their practices is the railway associations. Through this agency there has been afforded the opportunity for the free exchange of opinion and information that has brought to the entire industry the thinking and the experience of officers of individual roads. That the associations have justified their existence goes without question. That an increase in the number of such organizations is to be expected with the growing diversification and specialization of railroading itself is likewise evident.

In this association work it is essential at all times that those directing the activities of each organization bear in mind that these associations are a creation of the railroads and merit their co-operation only so long and to the extent that their objective is the service of the roads and the promotion of more efficient practices. In other words, each association owes to the railroads the obligation to conduct its activities in the way that will secure the maximum constructive results with the minimum expenditure of time and money for meetings and traveling. This is particularly true at present when the roads are so sorely pressed to eliminate all unnecessary expense.

That railway executives feel that present conditions call for unusual prudence at this time is reflected in the recent action of the officers of the American Railway Association in denying requests of subsidiary organizations for increased appropriations and even curtailing appropriations of several years' standing. That this responsibility is also appreciated by officers of those associations that work independently of the American Railway Association is shown by the increasing number that are this year selecting central points, accessible to a large number of their members for their next meetings.

During the war when the activities of all of the railway associations were brought under the scrutiny of the Railroad Administration, the operations of some were suspended, while others were allowed to proceed under conditions which contributed most and detracted least from the regular activities of their members. During this period the meetings of these organizations were held almost universally at central points to enable the maximum number of interested persons to attend with the minimum interruption to their work. Since that time there has been a tendency on the part of some associations to depart from this practice and to meet from year to year in widely separated parts of the country. In the meantime, other associations, such as the American Railway Engineering Association, the Railway Fuel Association, the Traveling Engineers' Association, the Association of Railway Electrical Engineers, etc., have continued to meet in central points. Those associations which have met at outlying points have done so with the contention that such meetings are necessary to

retain the interest of the members living in those more remote areas. The selection of these points for conventions has also been influenced in no small degree by scenic attractions and the desire of the members to travel. Whether these latter considerations are in the interest of the associations and of the railways which support them is open to question.

It is not without significance that those associations which have achieved the greatest measure of success have, in large measure, been those which have adhered most steadfastly to central meeting points and have given little or no consideration to scenic or tourist attractions. If such a policy is beneficial in normal times, surely it warrants special consideration in times such as these, and any association which selects a remote meeting point at this time should be prepared to defend its action. In a similar manner, those in charge of the work of committees bear the responsibility of so directing that work as likewise to reduce the inroads on the time of the members to the minimum, and meetings of committees at non-central points should be examined with the same degree of care. This is a period that, from the standpoint of necessity, is as trying on the railways as that of the war, and it places a correspondingly heavy responsibility on those directing association activities.

First, Second and Third Class

THE one-way tourist and one-way coach fares to and from the Pacific coast announced for six-months' trial by western railroads will, when placed in effect on January 1, along with the regular 3.6 cents per mile rate, mark the development in the United States of a three-class passenger fare system similar to that employed by European railroads. Actually, this three-class arrangement has been in effect since November 1 for an experimental period of 30 days, which was extended recently by permission of the Interstate Commerce Commission to include the month of December. Whether or not this system of rates is continued beyond June 30, 1931, the period of experiment—eight months—should be long enough to give a true measure of the effect that the reduced one-way rates will have on motor coach and private automobile competition.

It is believed that the month to month application of the reduced rates has not afforded a fair test because of the feeling that the general public, in spite of extensive newspaper and other forms of advertising, has been exceedingly slow to realize that these rates are operative in regular one-way service and are not hedged about with the usual excursion ticket conditions. The necessity of specifying first, second or third class when stepping to the ticket window to buy a ticket for California should quickly fix in the public mind the opportunity to exercise choice of quality in the purchase of transportation, as well as in every other conceivable commodity. The theatre patron must decide whether he will sit on the main floor, in the balcony or in the gallery, and as travel

to California is generally classified under amusements, why should not the traveler have the same choice?

It is fine to think of the United States as a land where high wages and prosperity have distributed an equal ability to pay throughout the entire nation, but it is some times more practical to recognize that the idea is not universally true. And if the three classes of rates prove successful when applied to California travel, is it not reasonable to suppose that they would be workable for other long-distance passenger-travel routes?

Preparing for Winter

THE season is approaching when it may be expected that train operation on northern lines, particularly in large and busy terminals, will be more or less hampered by accumulations of snow and ice. Railway men can remember when the methods and equipment for fighting snow were of the most primitive character, and interruptions to traffic were frequent, complete and sometimes of considerable duration.

In recent years more attention has been given to this phase of winter operation and much work of a preventive character has been done, such as widening cuts where drifting snow caused serious interference with train movements, planting trees and shrubbery to minimize drifting and other expedients of similar character to reduce road delays and difficulties.

It is in terminals and at important interlockings, with their multiplicity of frequently used switches, however, that snow and ice offer the most serious handicap to the free flow of traffic. As contrasted with a few years ago, great advances have been made in the equipment and methods for keeping switching open, over the former reliance on hand labor alone. The use of switch heating equipment has reduced the labor of the track forces and rendered switch operation more dependable—a large advance in this respect.

A recent canvass of terminal officers as to the best method of combating snow in yards, interlockings and passenger terminals, brought out the almost unanimous opinion that, while most of the snow-melting and other snow fighting devices which are now available for this purpose are valuable and have their place in the snow fighting scheme, nothing can be considered as a substitute for adequate preparation, education and organization of the snow-fighting forces.

While the brunt of the labor and responsibility for keeping traffic routes open falls upon the track forces and their officers, operating officers are as definitely and deeply involved as are the maintenance officers. For this reason, they should take the same interest in the preparations that are made for this phase of winter work and the methods of organizing the forces for combating snow and ice troubles, and should assure themselves that both are adequate and, further, that proper arrangements have been perfected for getting the men on the job as emergencies arise.

The Railways Are Going to Fight!

We have taken too many vicious and evilly meant blows on the chin.... There is a change in the air.

By Elisha Lee

Vice-President, Pennsylvania

RAILROADS, as media for increasing the country's wealth and the volume of its commerce, hold the most important of all places in our national economy. Through their treasuries annually pass sums so stupendous as to exceed even the revenues and expenditures of the federal government itself.

In the seven years ended with 1929, our railroads spent \$5,800,000,000 upon improvements and betterments. The current year will add another billion. In the same period their services earned forty-three billions of dollars. They paid out in operating expenses thirty-two billions, including twenty billions for wages. Practically the entire balance, some eleven billions, also returned promptly to general circulation through taxes, fixed charges, dividends and improvements. For materials and supplies about \$9,700,000,000 were spent, partly from earnings and partly from new capital.

The mere recital of such figures brings into clear relief the magnitude of the services which the railroads render, the part these services play in sustaining trade and employment, and the importance of railroad earning power and credit as factors in our general economic well-being. With this background, I wish to formulate two very simple questions, stating for each the answer which, in my personal view, expresses the truth.

What Should Business and the Railroads Expect of Each Other?

The first is: What should American business expect from the railroads? An answer with which I think no one will disagree is: Reliable, dependable, speedy, economical transportation service, 365 days in the year, in all weathers, and in all states and conditions of trade. Is business getting such service? Emphatically, yes. American railroads in the last six or seven years have given American business the best transportation service, measured by all recognized tests, that the world has ever seen.

The second question is: What should the railroads

EDITOR'S NOTE—This article is an abstract of an address delivered by Mr. Lee at the annual dinner of the Railway Business Association, New York, November 19.



Elisha Lee

expect from business? My answer to that is: United support of policies, both governmental and commercial, which will not merely keep the railroads out of insolvency but will make them comfortably prosperous, stabilize their credit, and enable them to continue their progress and advancement and meet the ever rising standards of service required by public needs.

Has business done this? Generally speaking, I am sure that American business men, and particularly the leaders of our great industries, realize fully the necessity for a constructive attitude toward the railroads, and guide their own conduct accordingly.

Present Policy Injurious to General Business

In many important respects, however, I cannot avoid the conclusion that there have been very unfortunate exceptions, harmful and unjust to the railroads, and in the long run destined to injure business itself. I refer especially to what may be termed opportunist policies with respect to freight rates, and the patronage and encouragement of other media of transportation engaged in unsound and uneconomic competition with railroads.

American railroads, though acknowledged to be the best in the world, have for many years been given far more than their share of trouble and rough treatment. We, in the railroads, have made the mistake of over-meekness. We have taken too many vicious and evilly meant blows on the chin with a smile. From this time on, if I correctly interpret the spirit of my colleagues, there is to be a change in the air. The railroads, their stockholders, their employees and their managements have rights, and we are going to fight for them with the best that is in us. Starvation returns have been the lot of the railroads for years. The day is at hand when better treatment is necessary. It must be demanded.

Our natural allies will be the constructive, thinking business men of the country who do not need to have it proved to them that they need good railroads. We want to feel that these leaders of business, of which this audience is highly representative, are with us, and

I am confident they will be, when the situation is fully realized.

Some of our difficulties are inherent in our railroad laws, or in policies and theories of regulation. There are ways, however, in which business, itself, has repeated opportunities to lend the railroads greatly needed help even under our present laws and regulative practices. A most important one would be by concertedly refraining from efforts to pull down specific rates for temporary competitive advantage. Another would be by acquiescing in efforts to advance individual rates, or groups of rates, where a sound basis for so doing exists. Still another would be by registering disapproval of competition against the railroads which is not self-supporting or depends on subsidies. Business cannot be given a full bill of health, in all of these respects, upon the record of recent years.

Constant Decline in Rates

The last general reduction in freight rates, by regulative authority took effect the middle of 1922. It became fully operative in 1923. In the latter year the average revenue for carrying a ton one mile was 11.16 mills. By 1929 this had fallen to 10.76 mills, a reduction of 40 hundredths of a mill, or about 3.6 per cent. The chief factor which brought this about was the attrition of rates—the results of constant effort, here and there, in thousands of instances all over the country, to obtain a small concession in some specific rate, or group of rates, for some competitive advantage, accruing or anticipated, on the part of some individual industry or group of industries, or industrial or commercial district.

Where a proper adjustment of rates is required by fairness, the railroads should, of course, meet the situation either by individual advances or reductions. Unfortunately, rate adjustments are almost universally downwards, and many are not warranted. Nearly every such change forced upon a railroad must be followed by further changes before the adjacent rate structure reaches equilibrium again, so that the evil tends to spread.

Railroads Themselves Must Share the Blame

The railroads are not entirely blameless in the situation I am describing. There have been instances where some individual railroad attempted to gain temporary advantage by a lowering of a specific rate and then found that all it had accomplished was a reduction in net all around. But generally such action has been the result of serious pressure brought to bear, which the officers of particular roads, for reasons which seemed compelling to them, either rightly or wrongly could not resist.

The decline in the average ton-mile revenue in the seven years from 1923 to 1929, considered by itself, seems a very small thing; but so great are the figures of ton-miles carried that the resulting loss has been very serious. If the traffic actually carried in 1929 had earned the average per ton-mile of 1923, the railroads would have received about \$176,000,000 additional freight revenue, all of which would have been added to net operating income. Had that been the case, the carry-over from last year, together with the additional revenue which would be accruing this year, would be furnishing most important aid in a period of great difficulty. It would be a tremendous help in meeting the extremely serious problem of sustaining employment.

Revival of Rate War in Insidious Form

With the virtually complete concentration of regulative power over rates in the hands of federal authority,

it used to be thought, especially since the passage of the Transportation Act, that competition in rates was ended, and that only competition in service remained. Everywhere this was hailed as a healthy condition. But what are we to conclude when we find pressure brought on a particular railroad to reduce specific rates under threat of diversion of traffic to another railroad or to another medium of transport? Is not that a reintroduction of rate competition, and in a most insidious and dangerous form? Is not this true, also, where the pressure, instead of being aimed at the reduction of existing rates, is directed to prevent the strengthening of particular rates when sound reason exists for advancing them?

Let me cite a single example which may illumine both the process of attrition and the nature of unsound and uneconomic highway competition as well. A railroad for some time carried a certain commodity from tidewater to an interior manufacturing plant. A year or so ago a local adventurer, with very little working capital, approached the industry and proposed trucking the material for less than the railroad charges. The industry, in turn, approached the railroad and asked an equivalent cut in its rate. This was declined, for two reasons: First, the proposed rate was unreasonably low; second, establishing it would upset the entire rate structure on the commodity in question throughout a wide area.

Trucker Fails but Another Takes His Place

The industry thereupon gave the business to the trucker, who purchased his equipment on installments which he expected to meet out of earnings. The traffic left the rails for the highways, built and maintained by taxes to which the railroad was a large contributor. The truck operator had the same experience as many others. He appeared at first to be making money on the basis of his operating costs and installment payments. He had not, however, allowed sufficiently for depreciation and upkeep. In due course he failed and the business has, for the time being, returned to the railroad.

Meanwhile, another trucker has appeared and submitted a similar proposal to the industry. He has no more capital than the first, and again intends to purchase the trucks on a small down payment, with monthly installments to meet from earnings. What will be the final result is not yet indicated.

Who Gains from Such Competition?

Such competition as this is of course uneconomic and harmful from every viewpoint, though typical of what is going on in thousands of instances all over the country. The truck operator loses his investment in the end; the railroad loses business and revenue. The gain to the manufacturing plant is too trifling to be considered as any adequate offset to these far-reaching wrongs.

American business is justly entitled to the benefit of all real advances in the art of transportation, whether upon the railroads themselves or in the form of other agencies. But can we say that the country will be helped in the long run by subsidizing expensive artificial waterways through taxation and then compelling the railroads to make through rates with them, short-hauling themselves and cutting their own revenues?

If Waterways Are Justified, Why

Bar Their Use to Biggest Taxpayer?

If these waterways are really needed, what justice or reason is there in a law which singles out the railroads, whose special business is that of transportation, as being

the one and only agency in the country forbidden to use them? If it is sound doctrine that the true economic place of the motor vehicle in commercial transport is in performing auxiliary services in co-ordination with the railroads, then is it sound to allow wholly unregulated competition against the railroads, for long distance hauling, on highways built and maintained out of taxes? Can the railroads, as the principal taxpayers of the country, continue indefinitely to support these forms of competition against themselves?

Meanwhile the railroads have many things to contend with, against which perhaps they have no effective basis of complaint. To mention some, we have the competition of non-commercial motor vehicles, both passenger and freight; the increasing use of pipe lines for oil and gasoline; the increased use of water power as a substitute for coal; the possibility of burning coal at the mouth of the mine instead of transporting it.

True Economy Can Come Only from Co-ordination

The railroads are attempting to do their part in every direction possible to meet the situation which exists, and will continue to do so with undiminished vigor and vision. We on the Pennsylvania—and I think our views represent railroad opinion generally—hold that the railroads are the fundamental and basic transportation agencies of the country, and that all other forms of commercial transport on the highways, the airways and the waterways, should be grouped around them, as auxiliaries, in a co-ordinated and comprehensive service to provide the kind of transportation the public wants in a form best adapted to its specific needs.

Co-ordination of trucks, for instance, with railroads, to collect and deliver freight in terminal areas, or even to replace way freight trains on short lines of light traffic, is one thing. Unregulated, uncontrolled, haphazard competition of commercially operated trucks that serve no economic need, but use the public highways almost free of charge, is another and very different thing. It is unsound, injurious, wasteful and unfair.

The operation by the government of barge lines that do not pay, and probably never will, but take traffic from the rails by waterways built and maintained through taxation is without rational excuse. Railroads, in order to preserve their usefulness and their ability to maintain and improve their service, owe it as a duty to the public to protect their revenues.

* * *



Where the Chesapeake & Ohio Crosses the Norfolk & Western East of Ironton, Ohio

Continue Hearings on Rail-Highway Service

THE Interstate Commerce Commission continued at Kansas City, Mo., on November 21, its hearing on Docket 23,400, Co-ordination of Motor Transportation. Representatives of independent motor coach and truck lines and chambers of commerce appeared before Commissioner Ezra Brainerd and Examiners Leo J. Flynn and A. E. Stephan, to testify concerning the extent of motor coach and truck service in the Kansas City territory.

W. L. Wimberly, assistant to the general manager of the Pickwick Greyhound Lines, described the operations of this independent motor coach company which, with subsidiaries, operates over a total of 10,502 route miles between Chicago, Omaha, Neb., St. Louis, Mo., Kansas City, Denver, Colo., Salt Lake City, Utah, Los Angeles, Cal., Portland, Ore., Tulsa, Okla., and El Paso, Tex. Short-haul rates, Mr. Wimberly said range from $2\frac{1}{3}$ to $3\frac{1}{4}$ cents per mile, while the rates for transportation over distances in excess of 500 miles range from 2 cents to $2\frac{1}{2}$ cents per mile. Where rates of less than 2 cents per mile are in effect, they have been forced by competition, he said. Between January 1, 1930, and September 30, the Pickwick Greyhound Lines carried 1,885,501 passengers.

Mr. Wimberly testified that the Chicago, Burlington & Quincy formerly had an interest in the Pickwick Greyhound Lines, but has disposed of this to the present owners. The capital investment of the Pickwick Greyhound Lines and its subsidiaries on September 30 totaled \$8,572,071. The operation at present is unprofitable on account of unregulated competition and "forced" rates, said Mr. Wimberly. He described the cut-rate situation between St. Louis, Mo., and Memphis, Tenn., and also between Kansas City and St. Louis. Mr. Wimberly introduced as an exhibit a statement comparing rail and motor coach fares between competitive points served by the Pickwick Greyhound Lines.

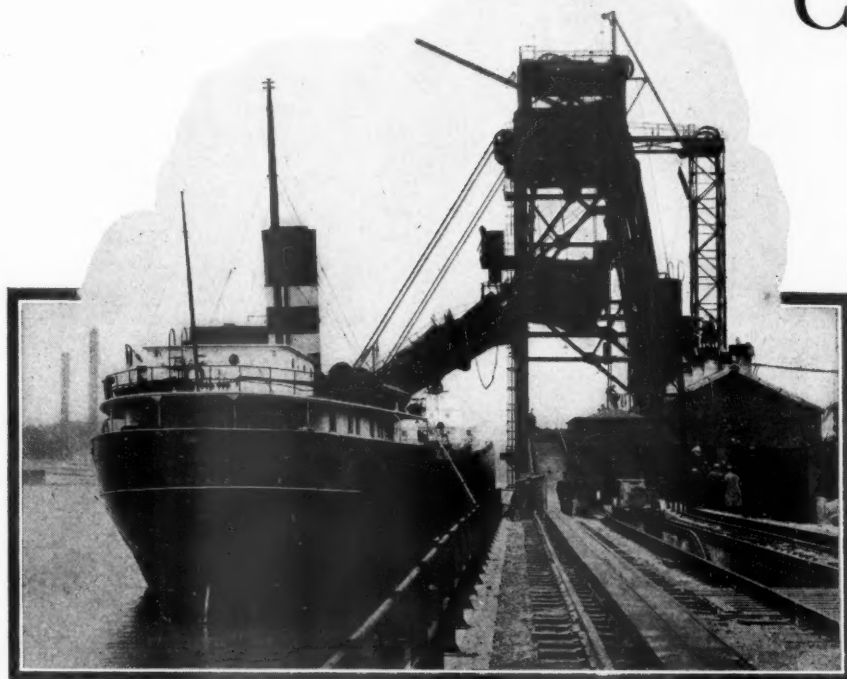
J. W. Blood, attorney for the Southern Kansas Stage Lines, testified that motor coach lines are under keen competition from private automobiles and that they no longer fear railway competition. He further testified that the railways will never be able to compete with motor truck service unless they improve their service greatly. Truck rates by licensed carriers in Kansas are generally five cents per hundred pounds higher than railway freight rates, said Mr. Blood, but shippers are willing to pay the extra charge because of the faster service offered, and also because of the store-door collection and delivery service. The Southern Kansas Stages Lines are now operating 870 truck miles daily between 55 freight stations, and are handling 250,000 lb. of freight daily.

C. F. Real, traffic manager of the Topeka Chamber of Commerce filed an exhibit containing the statements of 22 Topeka shippers, the majority of whom agreed that they are being served better by truck transportation than by the railways.

J. H. Tedrow, transportation commissioner for the Kansas City Chamber of Commerce, estimated that the equivalent of 4,000 to 5,000 carloads of merchandise is being shipped in and out of Kansas City monthly by motor trucks. The Kansas City stockyards received 1,063,117 animals last year by motor truck.

The hearing was adjourned on November 21, to be continued at Dallas, Tex., on November 28.

New York Central Builds Modern Coal-Dumping Plants*



The Barney at the South Dumper Pushing a Loaded Car up the Incline

FOR the expeditious and efficient handling of the large tonnage of coal which moves through its docks at Toledo, Ohio, on Lake Erie, the New York Central has constructed and placed in operation two electrically-operated, coal-dumping plants of the elevating turnover type. The location and construction of the plants, as well as of the accompanying yards and tracks, are such as to secure the maximum efficiency in handling and dumping loaded cars and disposing of the empty cars.

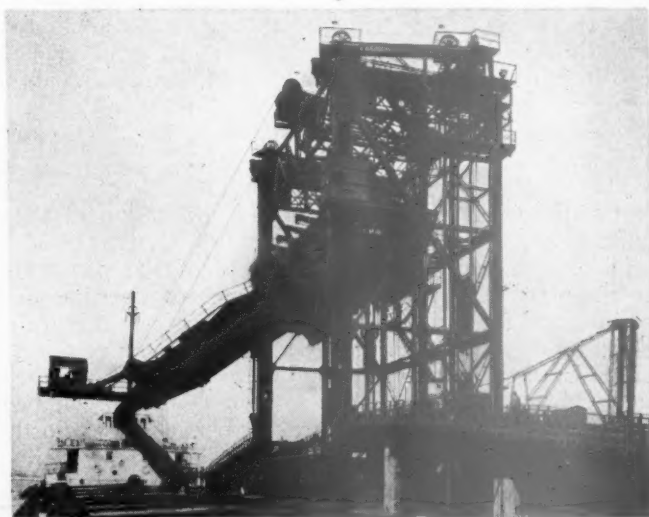
A large tonnage of coal, transported by combined rail and water haul from the mining fields to destination, passes through Lake Erie ports. This coal is transferred from cars to boats on the coal docks at Toledo, Sandusky, Huron, Lorain, Cleveland, Fairport, Ashtabula, and Conneaut in Ohio, and Erie, Pa., for transportation to other ports on the Great Lakes. Coal transported by this means is known as "lake" coal and its transfer from cars to vessels at Lake Erie ports is an operation of great importance to the transportation lines involved and to the shippers. Many shippers of lake coal handle several kinds of coal, each kind handled by each shipper being known as a grade or consignment and given a name. During 1929, there were 296 active grades of lake coal involved in the operation of the New York Central dock at Toledo. The maximum number of grades carried in the dock yard on any day was 110, the lowest number was 7, and the average throughout the lake season was 83. It is apparent that the classification and storage of lake coal under these conditions is complicated and involves an operation far different from that of the

Two electrically-operated towers on lake front at Toledo embody latest principles in design

ordinary classification and storage yard.

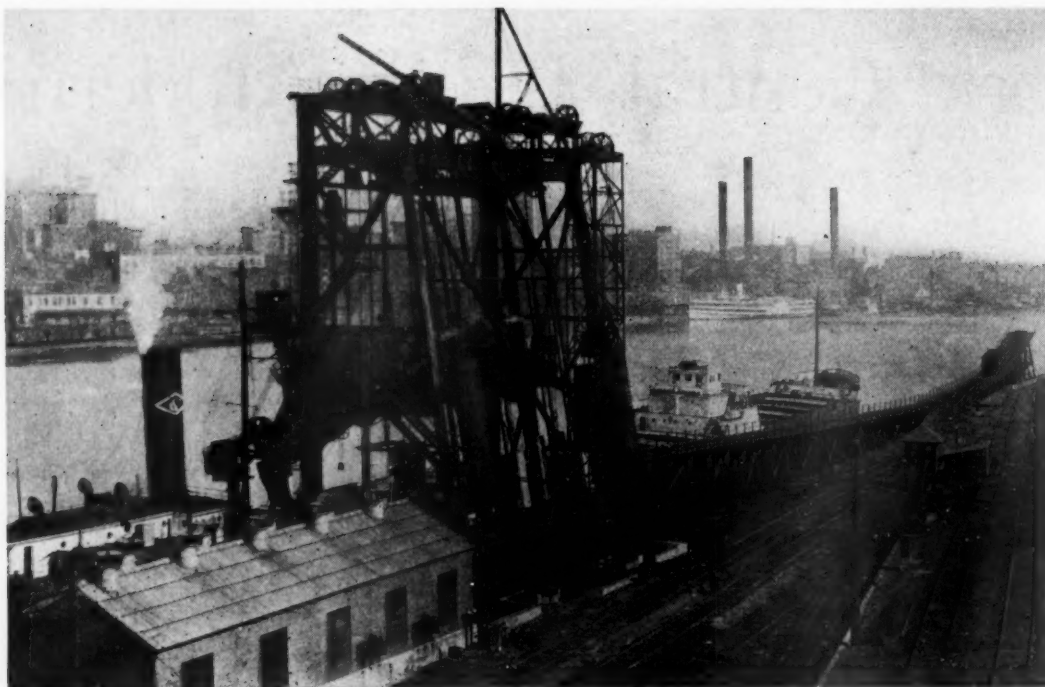
During 1929, 6,698,380 tons of coal were handled by the two car dumpers on the New York Central dock at Toledo. A total of 116,604 cars was dumped, the average load per car was 57.4 tons, the total number of boats loaded was 1,100, the average number of cars loaded per boat was 106, the average tonnage of coal loaded per boat was 6,089, and the average number of grades of coal loaded per boat, for the entire 1,100 boats, was 2.83.

The New York Central dock at Toledo is on the east bank of the Maumee river. It has a pile and concrete bulkhead about 4,000 ft. long, near the harbor line, with the top elevation 7 ft. above mean lake level. The entire area between the bulkhead and the Government channel, with an average width of 200 ft., is dredged to 22 ft. below mean lake level. The Government channel is 400 ft. wide and there is, therefore, an average width of 600 ft. of deep water in front of the bulkhead throughout its entire length, and boats can arrive at and depart from the dock under their own power and without



The North Dumper in the Operation of Dumping a Car

* Abstract of a paper presented before the American Society of Civil Engineers at Cleveland, Ohio, which was prepared jointly by J. A. Stocker, chief engineer of the Ohio Central Lines of the New York Central; B. R. Leffler, engineer of bridges of the N. Y. C. Lines West of Buffalo; Wendell P. Brown, consulting engineer; and C. S. Albright and R. E. Rice, electrical engineers on the N. Y. C.



The South Dumper
From the Rear—Note
the Empty Car on the
Kickback

the use of tugs. There are two car dumpers, one 800 ft. from the north end of the bulkhead and the other 1,400 ft. farther south. Boats tied up at the dock can move to either car dumper, as may be required, under their own power. Immediately back of the car dumpers is a lake-coal storage yard with a capacity of 900 cars. Between the dock and the Toledo Terminal Railroad crossing, about three miles distant, there is a lake-coal storage yard with a capacity of 2,900 cars. South of the Toledo Terminal Railroad, about five miles from the dock, is a classification yard for lake coal, local Toledo business and interchange with other railroads, with a capacity of 4,500 cars. Two running tracks, connecting the dock with the storage and classification yards, provide for the free movement of cars to and from the dock.

Operation of the Coal Dumpers

When coal is being dumped, loaded cars are placed on a cradle which is elevated to the desired height and rotated about a hinge, turning the car over so that the coal flows on to a tapered, inclined pan, or apron, with the higher, broad end next to the dumper and the lower, narrow end over the boat. A telescopic chute is attached to the lower end of the pan and the coal flows from the car over the pan and through the chute into the boat. The chute may be swung so that coal can be deposited in the boat throughout its full width. A deflector at the lower end of the chute provides means for deflecting the coal a short distance lengthwise of the boat.

The elevation of the hinge, about which the cradle rotates, the elevation of the pan, the inclination of the pan, and the length and direction of the chute, are adjustable. In operation, the lower end of the pan and the chute are kept full of coal as much of the time as possible, and the coal is permitted to flow from the lower end of the chute in a steady stream of slow velocity. There is, consequently, a minimum breakage of the coal. One car is dumped at a time. The car can be stopped in any position, so that all or part of the carload may be delivered to the boat as required.

The cradle is provided with a movable platen, consisting of a pair of track rails on a girder span. The

track rails line up with the approach and run-off tracks when a car is being delivered to the dumper. As the cradle begins to rise this platen moves laterally toward the vertical side of the cradle until the side of the car comes into contact with blocks attached to the cradle. This arrangement provides for handling cars of various widths. An adjustable clamping mechanism makes contact with the top of the car as it is being elevated, to hold the car on the cradle when it is turned over. This provides for handling cars of various heights. These dumpers are operated entirely by electric power and equipped with automatic control, which provides the highest degree of safety of operation. To reduce the power demand, counterweights are used to balance a large part of the total load elevated.

The dumpers are designed to handle all cars within the following ranges:

Gross weight	90,000 to 330,000 lb.
Empty weight	30,000 to 85,000 lb.
Length of car inside	26 to 56 ft.
Length of car overall	28 to 58½ ft.
Width of car overall	8½ to 11 ft.
Height of car	6½ to 13 ft.

The dumpers are designed for loading all types of vessels in the lake-coal trade, ranging from barges to lake boats—64 ft. wide, with hatches 35 ft. above the water.

The two dumpers, known individually as the north dumper and the south dumper, are, in many respects, similar in construction and operation. The north dumper was placed in operation in the spring of 1926, and the south dumper in the spring of 1929. The former utilizes an inclined load yard, which consists of five tracks with a combined capacity of 60 cars, the tracks having a grade of 1.5 to 2.0 per cent descending toward the dumper. The loaded cars are handled by car riders down the grade to the dumper. The movement of the cars through the dumping operation is essentially similar to that at the south dumper, as explained later. The empty cars, when leaving this dumper, are also handled by car riders down a seven per cent grade on to a kickback, which reverses their direction; thence, down grades ranging from 2.2 per cent to 0.0 per cent into an empty yard consisting of five tracks with a total capacity of 120 cars.

The south dumper operates without the use of car riders. This dumper is provided with a level load yard, consisting of six tracks with a total capacity of 144 cars. The spacing of these tracks is alternately 16 ft. and 13 ft., center to center. In each of the 16-ft. spaces, there is a 36-in. gage track for the operation of an electric car pusher to serve the track on either side of it. There are thus three car pushers serving the six load-yard tracks. These six tracks converge into a single track as they approach the barney pit and along either side of the pit, the approach track and the end of the load yard next to the barney pit, is another 36-in. gage pusher track on which an electric-car pusher operates. The three pushers in the load yard feed the cars in cuts to the two pushers which serve the barney pit and the pushers feed them, one at a time, on to the barney pit, where they are stopped in proper position by a fixed car retarder engaging the outside of the car wheels only.

The barney pit is at the foot of a 12 per cent grade. The car pushers are not attached to the car, but simply move the car by means of a pusher arm bearing against its rear sill. In order to stop the car in proper position on the barney pit and prevent it from running part way up the grade and rolling backward, a retarder is provided on the barney pit. This retarder is fixed in position, with no operating mechanism and the car is pushed out of it without releasing the pressure.

The track on the barney pit is 16 ft. above mean lake level. A disappearing barney, attached by a pair of cables to an electric hoist under the approach track in the substation building, pushes the loaded car up a 12 per cent grade on to the cradle of the machine, which is 15 ft. higher than the barney pit, where the car is stopped by a car retarder operated by air and controlled by the barney operator, who is stationed in a cabin in the rear of the cradle and a short distance above it. An electrically-operated track skate is provided on the run-off track, near the end of the cradle, to insure stopping the car in case the retarder should fail to do so.

The Dumping Operation

As soon as the loaded car is stopped on the cradle and the empty car has cleared the cradle, the barney operator pushes a button which starts the cradle hoist,

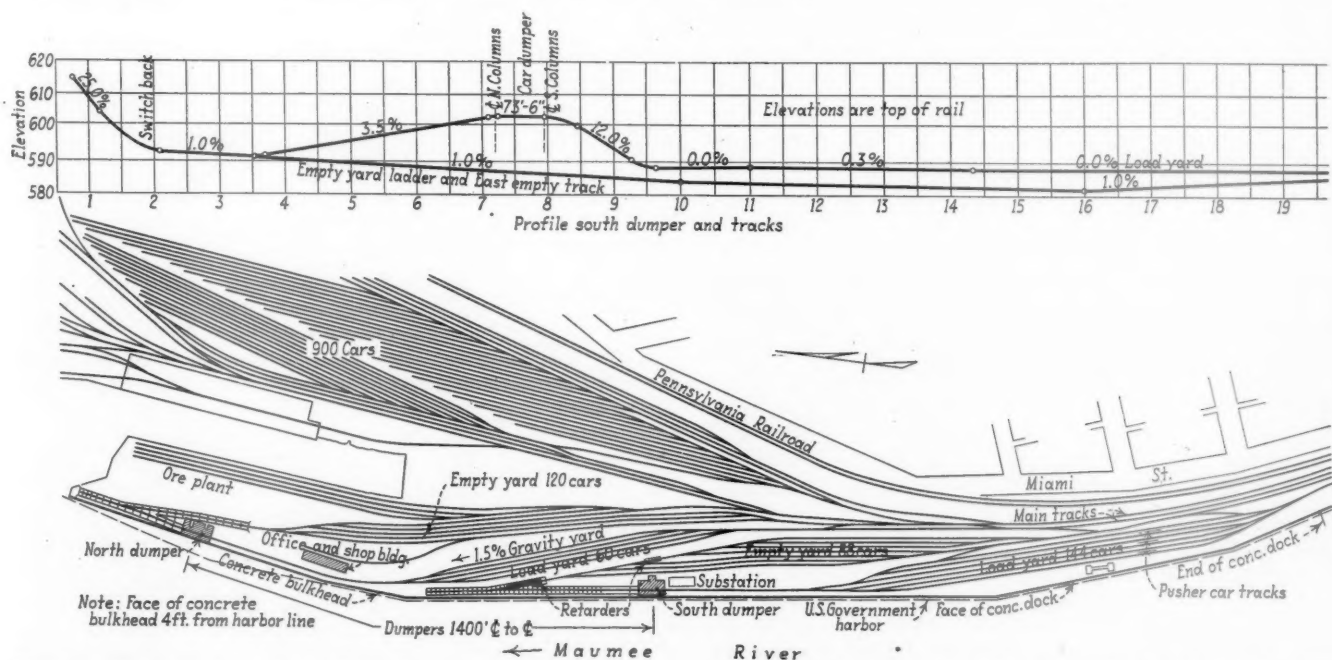
in the lower part of the dumper, which automatically elevates the cradle, rotates it, stops while the coal is flowing from the car, then reverses the movement of the cradle and restores it to its low position. A second operator, located in a cabin at the lower end of the pan and the upper end of the chute, controls the flow of coal into the boat. These two operators can handle the dumper, but a third operator is used. He is stationed in a cabin at the front corner of the dumper, at the approach end and above the cradle hinges. His function is to insure that the clamps are in proper engagement with the car, keep a lookout for foreign objects which might damage the dumper or interfere with the flow of the coal, control the movement of the cradle when a car is to be only partly dumped, and stop the cradle in its downward movement and reverse it for a second turnover in case the coal becomes clogged and the car does not empty entirely.

The empty car runs down a 3.5 per cent grade on to a kickback, where it is reversed in direction; thence, down grades of one per cent and less into an empty yard consisting of seven tracks with a total capacity of 88 cars. This yard is provided with car retarders and switch machines, which are controlled by an operator in an elevated tower overlooking the yard. This method of handling cars without car riders has proved highly satisfactory from every angle.

The Electric Car Pushers

The electric car pushers are of the traction type with four wheels. They are especially designed to push cars on adjacent tracks by means of a manually-operated pusher arm, or bar, which moves laterally through the body of the pusher and is located so that it can be extended into the space between the cars and make contact with the end sill at an elevation from 35 to 46 in. above the rails. The pusher arms are equipped with flat-leaf springs, which permit the end of the arm in contact with the car to deflect slightly to absorb the impact when engaging the car.

The Ward Leonard control of the elevating apparatus provides special features worthy of note. The maximum speeds hoisting and lowering may be adjusted independently. This makes it possible to lower the barney or cradle with an empty car at a consid-



Showing the Location of the Coal Dumpers and Tracks at Toledo and the Profile of the Tracks Serving the South Dumper

erably higher speed than is possible for hoisting a loaded car, and still maintain complete control of the drive. Protection against overspeed is also provided, resulting in the application of both mechanical and electrical braking. Emergency switches conveniently located can be used by the operator if it becomes necessary to stop the drive. The control in general is so interlocked that an abnormal condition in any of the motors or motor generator sets prevents operation until normal conditions are established. The failure of any circuits while the equipment is in operation automatically stops the operation.

Operation of the Barney

The barney control is semi-automatic; the operator having full control at all times. When a car is spotted at the foot of the grade, the operator throws the barney controller to full-speed hoisting. The barney automatically accelerates to full speed and on leaving the pit slows down to engage the car. It travels at reduced speed until it engages the car, when it automatically accelerates to full speed, bringing the car up the incline. As the car approaches the cradle, the operator slows down the drive to proper speed for engaging the car on the cradle. If the cradle is not seated, the car is automatically slowed down and stopped at the top of the incline. The control is also interlocked to prevent the operator from pushing the car on to the cradle unless the cradle is within two feet of being seated. Should the cradle be stopped within this distance, the barney operator must stop the car on the incline. As soon as the car is stopped, the barney operator throws the controller to full-speed lowering and the barney automatically returns to the pit ready for the next car. The cradle drive is similar to the barney drive, except that it is entirely automatic with speed control by the operator if desired.

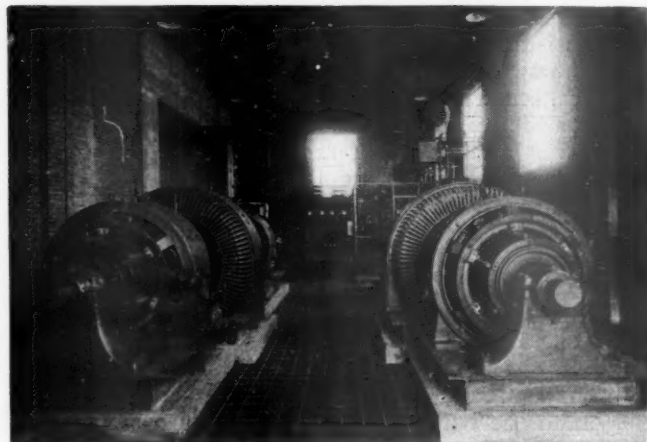
The barney and the cradle are each driven by two 500-hp., 475-volt, separately excited, reversing motors of 675 revolutions per minute, permanently connected in series electrically and geared through a single reduction herringbone gear to the drum driving the barney or the cradle. One motor is located on each side of each drum. Each motor is equipped with a hydraulic shoe-type electric brake, mounted on the commutator end of the motor and integral with it.

The pan hoist is driven by a 275-hp., 230-volt, series-wound motor of 375 r.p.m., equipped with a shunt-wound solenoid brake of the shoe type. The pan is unbalanced in all positions and hence an emergency brake set by springs and released by air is provided. The screw machine is driven by a 150-hp., 230-volt, series-wound motor of 450 r.p.m., on which is mounted a shunt-wound solenoid brake of the shoe type. The chute is driven by two 50-hp., 230-volt, series-wound motors of 750 r.p.m., each equipped with solenoid brakes.

Design of the South Dumper

The stationary part of the superstructure of the south dumper proper is a structural steel tower, 100 ft. 9 in. high, from dock level to the sheave-supporting platform, with an additional height from this platform to the top of the derrick mast of about 36 ft. 3 in., making a total height of 137 ft. The length of the dumper parallel to the dock front is 73 ft. 6 in., center to center of columns, allowing 64 ft. clear between the front columns.

The width of the dumper tower perpendicular to the dock line is 39 ft. 2 in. from center to center of columns at the bottom, and 24 ft. 6 in. at the support-



Interior View of the Sub-station at the South Dumper

ing platform, the front columns of the dumper being vertical and the rear columns inclined. The two front columns are T-shaped, the top bar of the T being a plate girder 36 in. back to back of angles, and the stem of the T a 42-in. plate girder, with the base of the T an 18-in. I-beam. This shape gives the necessary section and affords facilities for the vertical movement of the cradle and pan girder along the columns. Along the top bar of the T are angle blocks, while the inside end of the top bar of the T acts as a guide for the cradle.

The two rear corner columns, which are inclined, are made up of two 15-in. channels with 28-in. cover-plates. The center rear column is supported in one plane only—that of the back of the dumper. It is approximately 95 ft. long and has a plate girder section 48 in. in the center and 14 in. at the ends. On the inclined back face of the dumper tower six tracks are built, the two at the ends being for the cradle counterweights and the four inside ones for the car clamps and platen counterweights. In the rear of the dumper tower and near the center of it there is a structural steel tower which serves as a support and guide for the cradle-hoist drum counterweight and also as a support for the stiff leg of the material derrick that is located on the top of the dumper on the sheave platform.

The Cradle

The cradle is an L-shaped structural steel frame designed with special regard to lateral stiffness and weighs, with the loaded car of maximum capacity, about 645,000 lb. It is designed to carry adequately this load, with 50 per cent additional for impact, not only in its normal or vertical position, but in any position during the 160 deg. of rotation (nearly upside down).

As the cradle is elevated from the receiving position, it is in contact with the two front tower columns by means of cast-steel, rubber-tired rollers, 27 in. in diameter, rolling on a finished track on the columns. At each end of the vertical side of the cradle is a cast-steel open hinge which, as the cradle is elevated, engages a similar open-hinge hook on the pan girder, causing the cradle with the loaded car to rotate until the coal slides out of the pan.

The cradle and car are counterweighted to aid in elevating and rotating by means of two counterweights connected to six wire ropes, 1¼ in. in diameter, passing over 75-in. sheaves located on the sheave platform and extending down to the vertical side of the cradle.

The platen moves transversely on the cradle and consists of an 18-in. deck I-beam girder span supporting the track rails on which the car is carried during the

operation of elevating and rotating the cradle. The platen rolls on 16 cast-steel wheels, 18 in. in diameter, which are bronze-bushed on forged steel axles and is moved automatically by means of counterweights to the vertical side (toward the boat) of the cradle, as the cradle is elevated, and is held firmly against the wood blocking on this side of the cradle by the platen counterweights.

As the cradle is elevated the loaded car engages four clamps which hold the car firmly on the platen and cradle by means of counterweights which roll on tracks supported by the inclined real tower columns. After the car is dumped and rotated back to a vertical position, the platen is automatically moved back to its receiving position by means of cast-steel bell-cranks engaging the fixed portion of the structure under the cradle. The platen is locked in its elevating and rotating position on the cradle by an automatic device operated in connection with the bell-crank.

Annual Report, Panama Canal

TRAFFIC through the Panama canal, which had had an upward trend for years, fell off somewhat in the fiscal year ended June 30, 1930, and was less than that in the preceding year in all respects except the aggregate net tonnage, Panama canal measurement, of the commercial vessels using the canal, according to the annual report of Governor H. Burgess. The net tonnage showed an increase of 4.8 per cent, but the number of commercial transits, the tolls levied, and the quantity of cargo carried all decreased in comparison with the traffic in the fiscal year 1929. The gain in Panama canal net tonnage in the face of a decline in other features of traffic was due to an increase in the size of the ships.

Considering commercial ocean-going traffic only, the number of transits was 6,185, as compared with 6,413 in the preceding year, a decrease of slightly less than 3.6 per cent.

Tolls amounted to \$27,076,890.01, as compared with \$27,127,376.91 in the fiscal year 1929, a decrease of \$50,486.90, or two-tenths of 1 per cent. Including launches, which paid \$517.77 in 1930 and \$1,512.39 in 1929, the grand total of tolls was \$27,077,407.78 in 1930 and \$27,128,889.30 in 1929, a difference of \$51,481.52.

Cargo carried through the canal in the fiscal year 1930 amounted to 30,030,232 tons. This was less than the 30,663,006 tons in the fiscal year 1929 by 632,774 tons, or 2 per cent.

While the traffic declined, as noted, from the levels of the preceding year it was higher in all respects except number of transits than in the fiscal year 1928, and higher in all respects than in any of the years prior to 1928. The years 1928, 1929, and 1930 form a group higher than the previous years, with transits exceeding 6,000, canal net tonnage in excess of 29,000,000 tons, tolls approximately \$27,000,000 and cargo in excess of 29,600,000 tons in each of the three years.

The net income from tolls and other miscellaneous receipts known as "canal revenue" was \$18,082,451.78. This was less than in the fiscal year 1928 but greater than in any other year of the canal's history. Based on an interest-bearing capital indebtedness of \$535,743,840.33 at the end of the fiscal year 1930 the revenue in 1930 was equivalent to 3 3/8 per cent, the report says.

The net profits of operations of the Panama Railroad Co., exclusive of the Panama Railroad Steamship Line,

but including commissaries, docks, coaling plants, cattle industry, and cold-storage plants, were \$1,523,874.28, as compared with \$1,693,873.17 for 1929, \$1,600,283.61 for 1928, \$1,644,189.37 for 1927, and \$1,347,887.33 for the year 1926.

Total net revenue for the year 1930 from all sources, exclusive of the Panama Railroad Steamship Line, was \$20,367,297.72 as compared with \$20,161,498.44 in 1929, \$20,561,847.90 in 1928, \$18,131,819.97 in 1927, and \$17,340,865.68 in 1926.

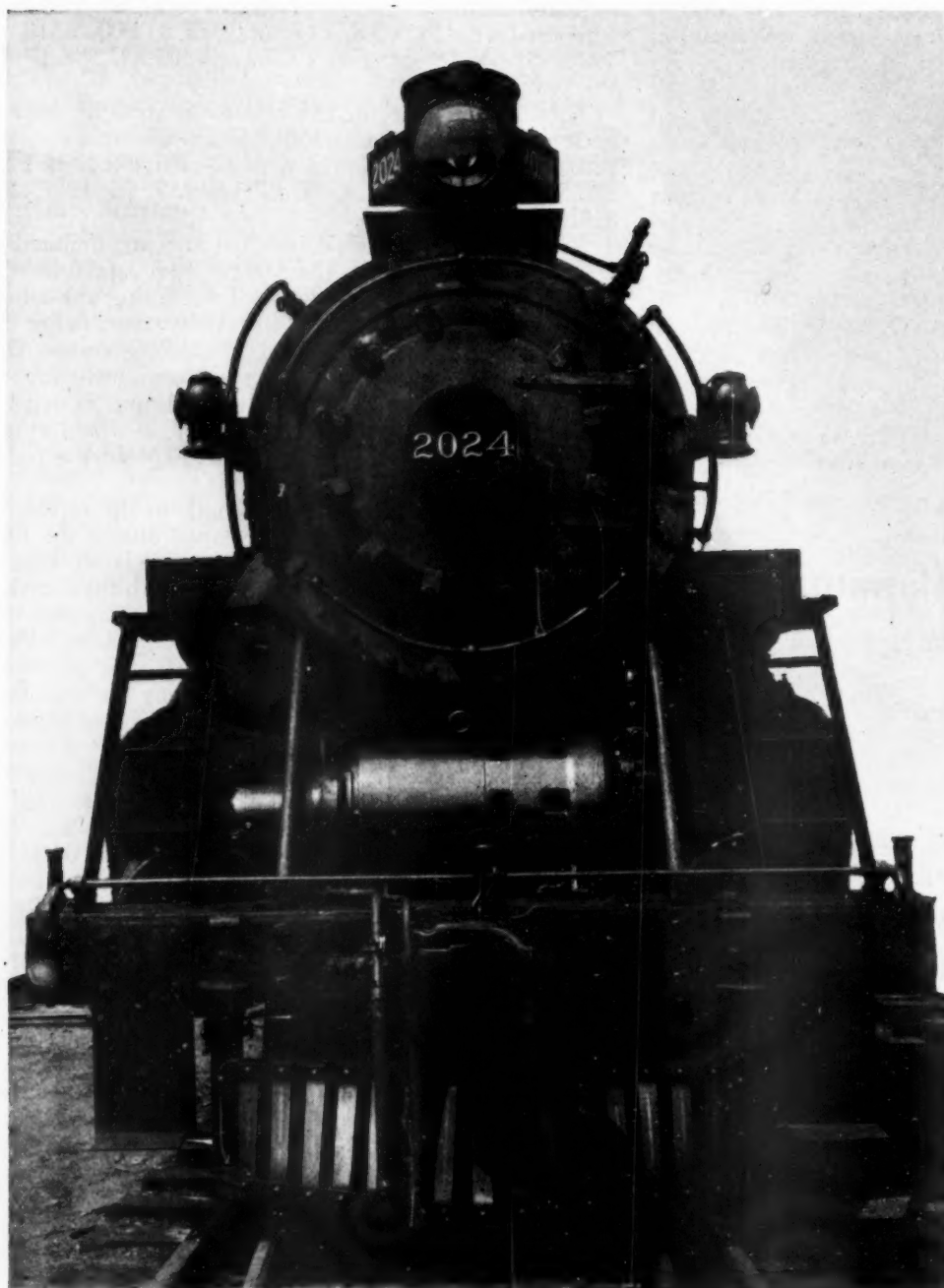
"Considering the capital invested and accumulated interest on the investment, the present total capital liability is such that the canal is not as yet earning the annual interest charge at 4 per cent, the current borrowing rate of the Treasury of the United States," Governor Burgess says. "For this reason and others, including the necessity of extensive additional expenditures in order to bring the canal to its highest efficiency, it would appear that at present there is no occasion to consider a reduction in tolls."

"This was discussed at some length in the report for last year. Nothing that has developed during the fiscal year 1930 affects the conclusion that there is no occasion for a reduction in tolls. In connection with the occasional recommendations of United States operators that tolls be reduced, it is claimed that such reduction would be an aid to American shipping. In the fiscal year 1930 tolls paid by foreign ships were 51 per cent of the total tolls, those by United States ships in the intercoastal trade 36 per cent, and those by United States ships in foreign trade, 13 per cent. A lowering of canal tolls below the value of the service rendered should be considered in the nature of a subsidy to shipping, and each million dollars of tolls reduction would represent a subsidy of \$510,000 to foreign shipping, of \$360,000 to United States shipping not in competition with foreign shipping, and of \$130,000 to those ships of the United States which are in competition with foreign flags. It is seen that as far as United States shipping is concerned the greatest reduction would be to vessels engaged in the intercoastal trade of the United States. These vessels are protected against the competition of foreign lines and their competition is with the railroads of the United States. As a matter of national policy the effect of lower canal tolls on the railroads should be given careful consideration. Tolls revenues are not now on the increase but expenses of operation and maintenance are, on account of the necessity of replacements and betterments. It appears in line with sound business practice to retain the rates of tolls at the present levels."

* * *



The Boston & Maine's North Station Yards at Boston, Mass.—The New Station Building is the Center One of the Three in the New Terminal Group



The Turbine-Generator Set is Located on the Front of the Locomotive—The Voltage of the Generator Varies Automatically to Suit Any Change of Electrical Load on the System

Central Energy System for Trains

Baltimore & Ohio develops method for supplying trains with alternating current at 220 volts

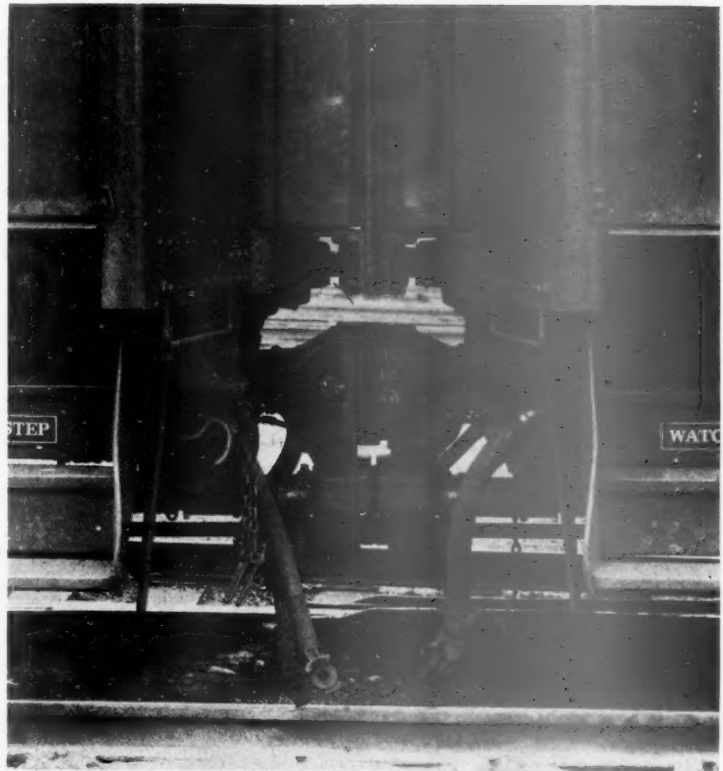
A SYSTEM of continuous electric power supply for trains, modeled after central station supply and distribution systems, has been developed by the Baltimore & Ohio. It is believed by the designers that the increasing demand for electric power can best be met by a system of supply which is continuous and not intermittent. It is also felt that if a larger amount of power is made available, it will provide means for materially adding to the comfort and convenience of passenger travel. The system is designed to supplement, and under certain conditions supplant, present lighting systems and provide an adequate and continuous source of

electrical energy in sufficient quantity to provide for the operation of air-conditioning equipment, electric refrigeration, vacuum cleaners, hot water heaters, cigar lighters, window operating devices, coffee percolators, and other devices which will enhance the attractiveness of the service.

A train equipped with this system, which is the first alternating current system of this type to be applied to railway service, has undergone tests in regular service between Baltimore and Hagerstown, Md. The equipment consists of a Pyle-National, 25-kw., 220-volt alternating current steam turbo-generator, which is self-regulating and self-exciting, mounted at the front end of the locomotive. Steam for the operation of the turbine is supplied from the locomotive and no additional duties are imposed upon the engineer except that of the opening or closing of the steam supply valve. A voltmeter has been installed in the locomotive cab for indicating electric voltage exactly as a steam gage is used for indicating the steam pressure.

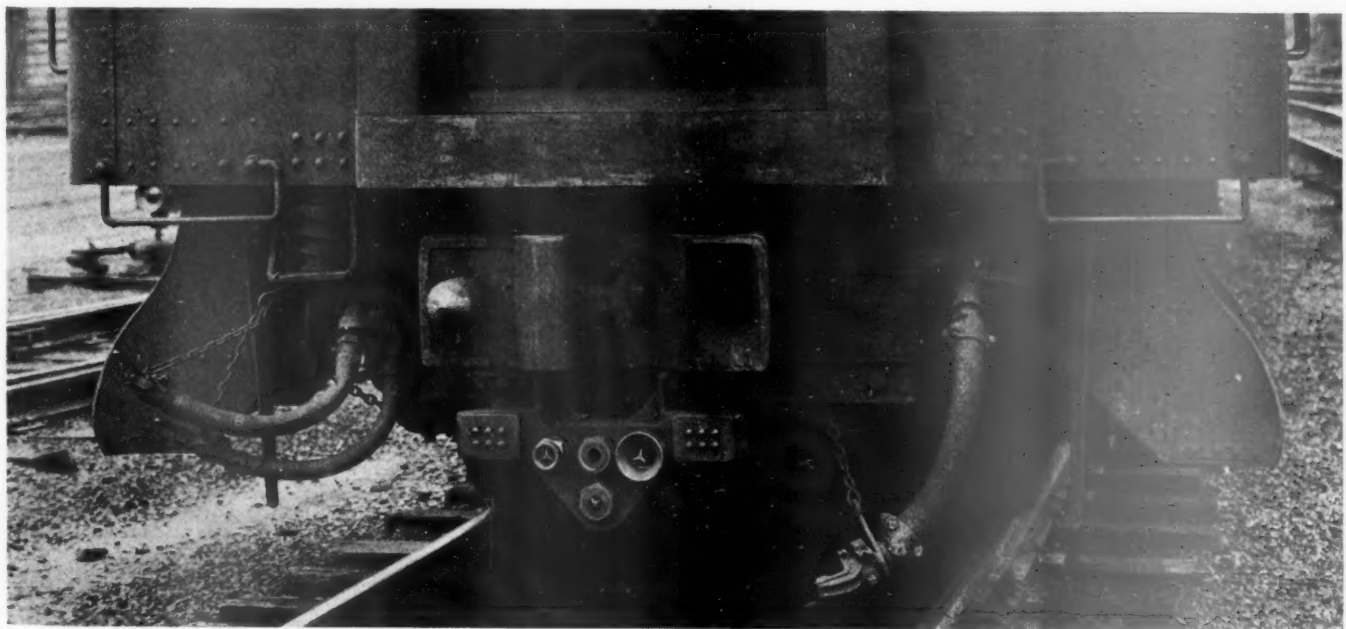
Sixty-cycle, single-phase, alternating current at 220 volts is conveyed from the generator to the several cars in the train. Each car is equipped with an air-cooled transformer of 1.5 kw. capacity, which reduces the lighting voltage to the standard of 32 volts. The electric connections between the tender and the several cars in the train are made automatically through the Tomlinson tight-lock type of automatic coupler which was applied more than a year ago to this equipment. This coupler automatically connects the steam, air brake signal and electric train lines.

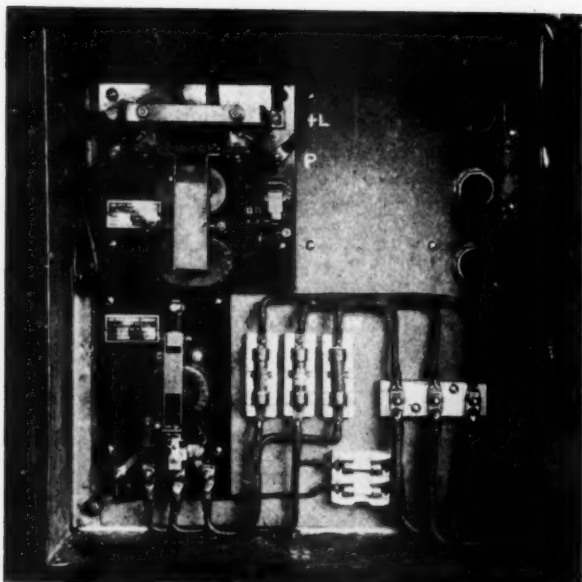
Each car is also equipped with a relay so designed that when alternating current is available, whether the train is standing in the yards, at stations, or is in transit, this source of supply will be used for the lighting requirements. If, however, alternating current is not available, the relay will automatically connect the lights to the battery with which the cars are at present equipped, provision for the charging of which will be made from the alternating current supply. This provides for the



Above—Two Cars
Coupled With
Tomlinson Tight-Lock
Couplers

Below—End View
of One of the
Couplers





Above—Relay and Fuse Box Under the Car

Right—The Main Switch is Mounted on the Cab—Flexible Jumpers are Used Between Locomotive and Tender

lighting requirements while the train is cut for picking up or setting out of cars.

Cars at present equipped with an electric lighting system, such as an axle generator or straight storage, etc., can be introduced into trains equipped with the alternating current system without change except to provide the necessary train line and connection between cars. If the alternating current system is to be used on such cars as a supplementary system, the necessary relays and transformer will be applied in a small steel box beneath the car floor.

Alternating current at a standard frequency of 60 cycles is generally available throughout the country at passenger stations and coach yards and therefore it is readily available for the lighting and power requirements when the cars are parked at stations or in the yards. One wayside connection is all that is needed to supply a coupled train with lighting and power service. While in transit, alternating current up to certain amounts will be supplied from a steam-driven generator mounted on the locomotive. For larger capacities a Diesel-electric generator, installed in the baggage car or possibly mounted on the locomotive tender, may be used.

The couplers used are O-B Tomlinson tight-lock couplers designed to secure a rigid connection between coupler heads when coupled. There are lateral wings of the pin-and-funnel type on the coupler head so designed that as the coupler knuckles engage the opposing guard-arm faces, the wings are brought into register. When the opposing faces of these wings are in close contact, the pin-and-

funnel connections hold the heads rigidly with respect to each other, and the knuckles are locked by a spring-actuated wedge lock which moves forward in the coupler shank. The action of the lock spring is faster than the recoil of the car and coupling is assured under any conditions which bring adjoining coupler heads together. Universal angular movement between the drawbar and the car body, as well as some torsional movement, is allowed for and the shank of the coupler contains its own draft gear. The automatic couplers serve to connect signal, brake-pipe and steam heat lines and include also 12 electrical contacts. There are 6 butt contacts on each side of the coupler which connect 6 train lines.

(Continued on page 1182)



Pennsylvania Opens Modern Stationery Store

Skids, package chute and card records used in new system supply house at Pittsburgh—Cut expense one-fifth

By W. R. F. Whaley

Stationery Storekeeper,
Pennsylvania

*Addressograph
Corner
Where All Tags
and Orders
Are Printed
to Save Time
and Errors*



*Most of the
Stock is
Stored on
Skids*

The consolidation resulted in a substantial reduction in force and in investments in materials, but the facilities left much to be desired. They consisted of an old four-story office building, containing about 20,000 ft. of floor space, and an adjoining second story of an old freight station which contained about 13,000 ft. of floor space. The office building and storeroom were connected by ramps which rose 4 ft. in 25 ft. The buildings were not well adapted for storehouse purposes and were in a badly congested area. The property site was also involved in a new freight and passenger terminal project.

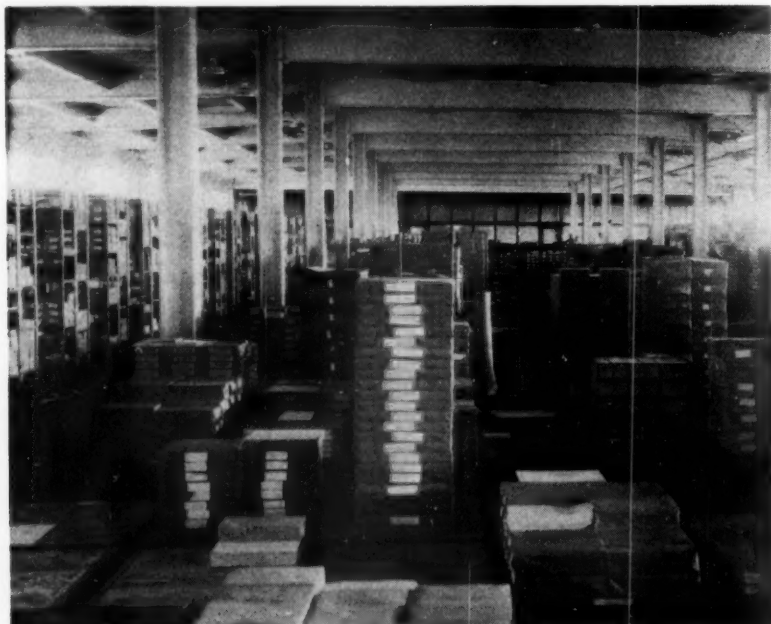
462 Ft. Long

These conditions led to the development of a new stationery storehouse on the second floor of an inbound and outbound freight station about to be erected at Eleventh and Etna streets. This building, which was completed and occupied early in 1930, is a structure of concrete, brick and steel, 790 ft. long and 800 ft. wide, and provides a storehouse for stationery 462 ft. long and 80 ft. wide with a floor space of 36,960 sq. ft.

There are 21 bays, each 22 ft. wide, between the pilasters. Above a brick wall which rises 3 ft. 6 in. high, each side bay carries steel window sash measuring 18 ft. from side to side and 83 ft. in height. Eight sash in each bay are ventilator sash, the upper four being pivoted in the usual manner, while the lower units are hung so that the glass swings only inward in order to force the draft upward. The roof is supported

FOR many years, the Pennsylvania had two stationery storehouses, one at Philadelphia for the lines east of Pittsburgh and another at Pittsburgh for the lines west. When the road was organized upon a regional basis after federal control, a stationery storehouse was also established at Chicago to serve what was then known as the northwestern region, but a few years later the company reverted to the previous arrangement. This continued until 1925 when all stationery work was consolidated at Pittsburgh, which is practically the geographical center of the Pennsylvania system and a point from which all offices can be conveniently served either by regular freight shipments or in emergencies by passenger train.

on steel purlines fastened to I-beams which are carried by the wall pilasters and by two rows of steel H-columns. The distance from each wall to the nearest row of columns is 25 ft. 1 in., and the distance between the columns being 27 ft. 7 in. The floor consists of a hollow tile subfloor, covered by concrete. In the store-room the floor is surfaced by treated wood blocks which are laid on a pitch binder to afford the desired insulation, while the office floor has a special cement-finish.



A View of the Center Section

Right—Shipping Section

The offices of the stationery storekeeper and clerical force occupy a full bay at one end of the building and are separated from the store by steel partitions fitted with glass. Next to each side wall in the store is a row of 27 steel racks which are placed at right angles to the wall. These racks are of the skeleton type. Each rack is 15 ft. long, 7 ft. high and 4 ft. wide, formed by placing two steel sections back to back. The shelves are adjustable so that the bin space may be increased or decreased to suit conditions and are arranged generally to form five tiers of shelves in each section. A space 2 ft. 6 in. wide is left between each wall and the end of each rack, and a width of 3 ft. 6 in. is provided between the racks for trucking.

Store Bulk on Skids

The floor space running lengthwise of the building between the two rows of steel columns supporting the roof is reserved for the storage of bulk materials, paper and printed forms, where the demand makes it inadvisable to break the packages or to store the material in bins. It was decided to eliminate bins for this storage and use platforms or skids of wood reinforced with steel and equipped with steel legs. There are about

500 of these skids now in use in the stationery house. They have a storage surface of 30 in. by 42 in., a clear height above the floor of 7 in., and a capacity of 3,500 lb. each and they can be approached with a jack lift truck from all four sides. Each skid has an assigned position in the storehouse, where they are arranged in rows, 10 skids in a row back-to-back against a second row of 10 skids, and with each of these groups separated from the next group by a wide aisle.

Materials are unpacked in one end of the store and placed directly on the skids, and jack lift trucks of 3,500 lb. capacity are used to move the skids and their contents to the assigned locations on the floor. To facilitate the movement of these skids, an aisle 6 ft. 6 in. wide is left between the steel racks in the side sections and the central section in which the bulk materials are stored. In filling requisitions, the items are withdrawn from the skids and shipped in the same way as the materials withdrawn from the bins.

The east end of the storehouse is used for materials that cannot conveniently be stored either in bins or on platforms; also for the storage of packing cases for outbound shipments; for receiving, wrapping and shipping packages; and for storing of the storehouse working equipment over night.

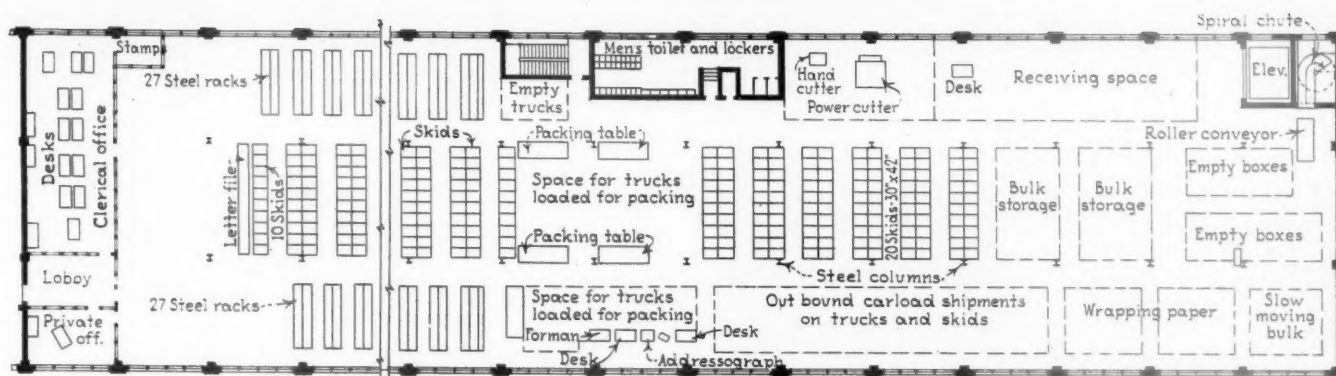
Inbound shipments are received on the freight house platform and are raised to the storehouse by means of an electric elevator of 6,000 lb. capacity. Conveyors of the es-



calator type were considered for this purpose, but were deemed less satisfactory and economical than the elevator.

Deliver by Chute

A gravity steel chute, 48 in. wide, is used for outbound shipments. The chute is a spiral type, making one and one-half turns in a drop of 22 ft., and is adapted for handling boxes and packages up to 50 lb. in weight, as well as mail bags. A portable gravity conveyor of the roller type is installed on the stationery floor to move packages from the packing area to the chute, and there is another roller conveyor on the freight house floor by which the packages are conveyed by gravity either to freight cars at the platform or to



The New Stationery Store Is 462 ft. Long and 80 ft. Wide—The Largest in the Country

auto trucks for delivery to the passenger station or to city offices. The chute handled over 200 boxes in 20 min. without injury to the contents.

Box shipments which are too large to be dropped through the spiral chute are placed directly on trailer trucks belonging to the freight house equipment, are marked to show the spot numbers of the cars for each destination and are lowered on the electric elevator to the first floor where they are turned over to the freight handlers and moved by electric tractors to outbound cars. Approximately 70 per cent of the shipments are made by freight. With the care used in stenciling and packing, this method of handling has been followed without either loss or damage.

Fourteen trucks of all-steel construction and with wooden platforms and steel skids, each equipped with two rigid wheels in the center and swivel wheels at the ends, are used in gathering supplies to fill requisitions, while box trucks of the six-wheel type and two-wheel hand warehouse trucks are also used for heavy shipments.

The store is equipped with eight steel wrapping tables, fitted with drawers and twine and paper racks which are utilized for preparing outbound packages. A power paper-cutting machine, 44 in. wide, is used for cutting old binders into active sizes and for cutting obsolete forms into scratch pads, and a 22-in. hand-operated paper cutter is also installed on the floor for some of the lighter work.

Mechanical Addressing Saves Errors

An electrically-driven addressograph is used in stamping the addresses of consignees on gummed labels attached to outgoing packages and in preparing purchase

orders and also orders on the printers for stock items. The plates cover the complete description and specification for each item. The order is produced with a hectograph ribbon, and from the master copy all underlying forms required for the purchasing agent's use are reproduced without transcribing any part of the information. Descriptions on all stock cards, racks, and skid labels are produced from the same plates, thus insuring accuracy and uniform information in all office and warehouse records. The skid labels show the maximum and minimum quantity of material to be carried in stock.

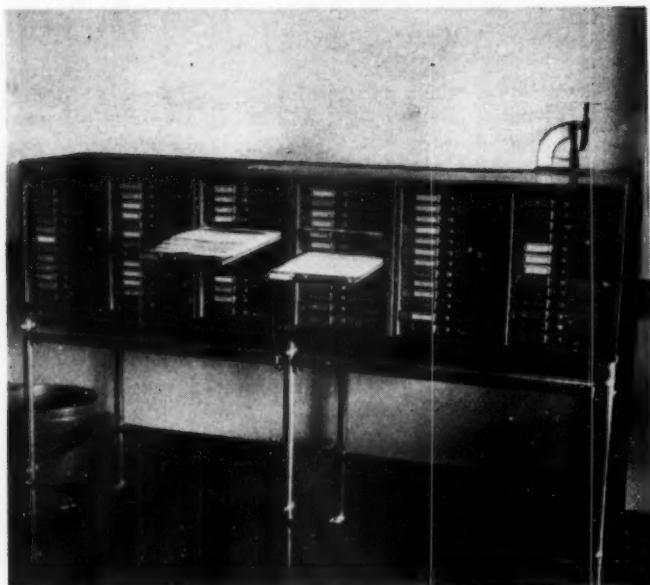
Card Records and Contract Buying

A stock card record of the visible type is maintained in the storehouse office. The quantity on hand is determined by actual count and the result of the count is posted directly on the stock card. The work of counting stock is spread over a period of 25 working days. To the quantity on hand at the beginning of a month is added the quantity received during the month. From this total is deducted the quantity on hand at the time of the next count, and the remainder represents the consumption during the 30-day period. To maintain the storehouse supply, replenishment orders are based upon the quantity on hand and due on unfilled orders. Such orders are placed daily for the items counted on that day.

The stock card shows all data concerning quantities and dates ordered, as well as the quantity received, and the date and the name of the seller. The latter is obtained from a blind tally receiving slip prepared by the receiving attendant. Invoices are checked with the records on the card, and the name of the firm, invoice

C - 216									
CLIPS, Gem Paper Clips No. 2, 100 to box, 1000 to carton.									
ORDER FROM									
SPECIAL INSTRUCTIONS									
SEC. BIN NO. MINIMUM STOCK TO BE ON HAND.									
21 500,000 600,000 400,000 32									
1930	ON HAND	USED LAST 30 DAYS	ORDERED		RECEIVED		FIRM	INVOICE	
			DATE	QUANTITY				AMOUNT	NUMBER
1-17	100,000	50,000							
2-19	20,000	30,000	2-20-30	100,000	50,000 2-27	50,000 3-5	Acme Handle Co.	0000	3275
3-17	70,000	50,000							
								DATE PASSED	PRICE
									00

The Stock Cards Are 6 in. by 8 in. and Are Ruled on Both Sides



A Visible Card System of Stock Records Is Used

number, amount, date passed and the price are all entered.

There are approximately 3,000 items of material carried in stock in this storehouse. Of these, about 450 items are purchased under contracts made by the purchasing agent with the seller whereby the stationery storekeeper may arrange with the seller to ship directly to the consumer when the quantity required is more than the minimum the seller has agreed to handle in this manner.

Office mechanical devices, such as typewriters of all kinds, adding and calculating machines, numbering machines, dictating and transcribing machines, and office clocks, new, rebuilt and repaired, are ordered on requisitions placed with the stationery storekeeper and are supplied as far as possible from the available stock of repaired or rebuilt machines. The work of rebuilding and repairing devices is awarded local repair concerns on a competitive basis, this method having proved more satisfactory than other ways of doing the work.

All postage and documentary stamps are furnished by the stationery storekeeper on properly-approved requisitions. The stamps are perforated before being sent to

users, and this work is done on an automatic machine which perforates ten stamps abreast in three sheets of one hundred each.

Turnover

It has been found economical to ship printed forms and stationery supplies in quantities sufficient to meet the requirements of the using departments for a period of three months under a regular schedule for each superintendent's division. Supplies for system and regional offices located in the cities of Philadelphia, New York, Pittsburgh and Chicago are shipped on requisitions calling for one month's supply.

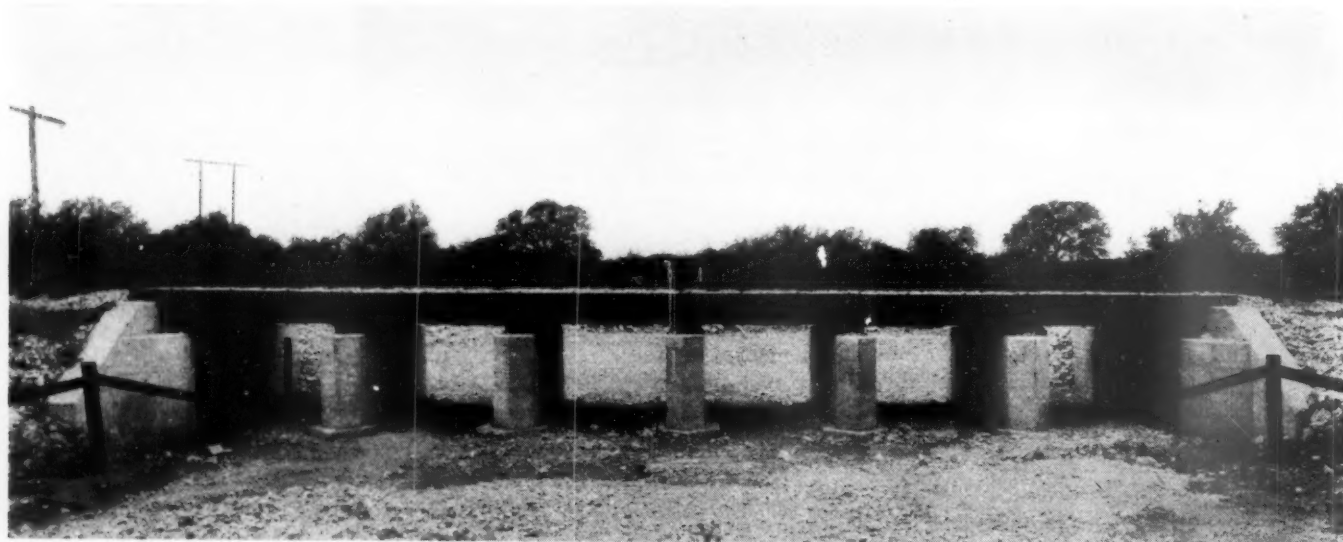
Requisitions from a superintendent's division are accumulated and distributed among the requisition fillers who check the items on the order as they are withdrawn from skids or racks. The materials are generally placed on four-wheel trucks and moved to the wrapping section where packages are prepared and labeled, after which they are placed on skids and held until the regular sailing date of the car to take them to destination, or loaded in an automobile truck for transporting to the baggage room for movement to destination in baggage cars attached to regular trains.

The store-room serves about 4,500 offices which originate approximately 100,000 requisitions a year, necessitating the preparation yearly of about 25,000 purchase orders, of which approximately one-half cover shipments to the storehouse, while the other half arrange for materials and supplies to be shipped directly from the seller to the consumers.

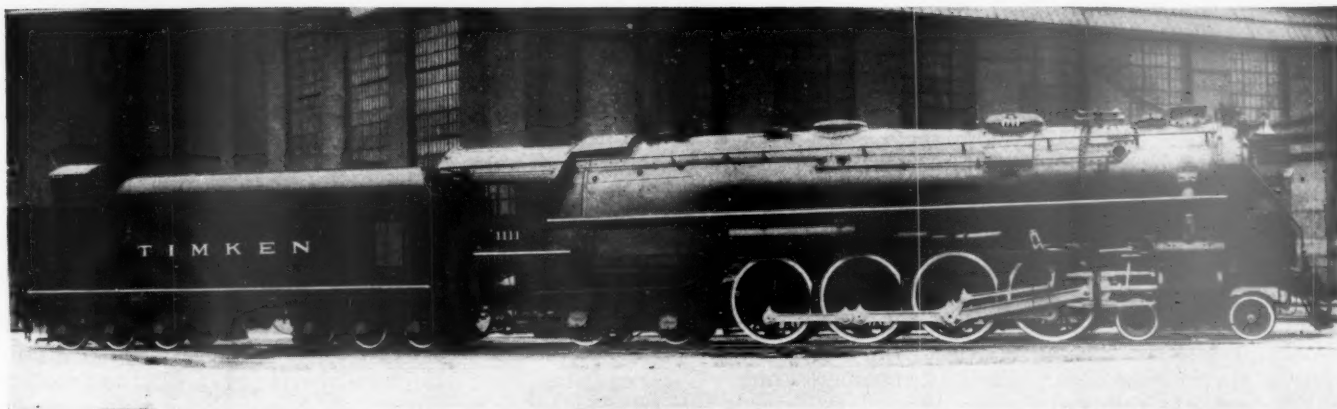
Results Highly Satisfactory

The advantages of a layout where ample storage space can be provided for all of the stock of any one item in one location, and the ease with which materials can be handled where the entire operation of receiving, storing, gathering, wrapping and shipping is confined to one floor and situated in the one building in which inbound and outbound shipments of freight are handled, have been strongly emphasized in the operation of this storehouse. It has been possible, through the utilization of modern labor-saving devices, such as skid platforms, jack trucks, chutes and elevators, combined with the application of the unit method of piling material, to reduce the force 21 per cent and the payroll expense 17 per cent, compared with the operation under the old conditions.

* * * * *



Typical Bridge Over Dry Run on the Santa Fe's New Alpine-Presidio Line in Texas



The Timken Roller-Bearing Locomotive

Operating Results with the Timken Locomotive*

The influence of roller-bearing locomotive on train operation indicated by 33,000 miles of tests on three railroads

By T. V. Buckwalter

Vice-President, Timken Roller Bearing Company

THE steam locomotive is the greatest civilizing influence the world has ever seen. It is the chief distinguishing feature between the civilization of today and the Roman civilization that existed 2,000 years ago.

It can be truthfully said that the American and Continental civilizations of today have developed concurrently with the development of the steam locomotive. The greater security and strength of our present-day civilization rests upon the superior production facilities of our modern industrial organization and this, in turn, depends for its value and usefulness on a quick, certain, reliable and all-embracing form of transportation. The back-bone of this transportation is the steam locomotive.

The future development of the steam locomotive will be influenced to a much greater extent in the future than in the past, by the change in population which this country is undergoing at the present time. The increase in population in the nineteenth century was about five per cent in the early stages of railway development and tapered off to about three per cent in the later decades of the century. Railway transportation was subject to a marked increase in mileage and capacity; first, to catch up with the transportation demands of the growing nation, and, second, to meet the increasing transportation demands brought about by a higher scale of living and by the increase in population.

This situation is materially changed, and is still changing, these changes being adverse to the railway situation. This is brought about by the marked reduction in the rate of population increase, which has been only about

one and a half per cent per annum during the last decade, with indications that the population will cease to increase and attain a fixed figure in fifteen or twenty years. The factor is further influenced by the relatively greater age of the individuals comprising a fixed population, with consequent reduction in commodities required in construction.

A particularly interesting feature of the above situation is that the railroad equipment, particularly locomotives, should be selected under present conditions for operation over a long period of time without material increase in the demands for transportation. This factor materially changes the picture as compared with the past 25 years, during which time it was possible to purchase large quantities of motive power and rolling stock with the certainty that the country would grow up to the transportation plant provided, particularly if the rolling stock or power did not happen to be selected in exact step with requirements as developed.

Passenger Traffic

Passenger traffic has suffered a decrease in the past decade of approximately four hundred million dollars annually. There is a probability that the railroad plant will retain the long-distance passenger haul, but the local passenger business is lost, with small probability of its ever being regained under existing conditions.

The influence of the automobile has been a marked factor in this decrease in passenger business and this influence is on the increase, rather than on the wane, the probabilities being that, with further development of the hard-surfaced roads, a larger percentage of the local passenger business will be handled by the private

* Abstract of a paper presented at a meeting of the Central Railway Club at Hotel Statler, Buffalo, N. Y., November 13, 1930.

passenger car, supplemented by the bus and, to a still lesser extent, by the airplane.

Freight Traffic Competition

Freight traffic has held up to a much more favorable extent than passenger. The automotive influence has been less marked in freight traffic. The motor truck has developed into a serious factor on short-haul business, and the probabilities are that this influence will continue to increase for some years. It is doubtful if the short-haul freight business can be regained and it is equally doubtful whether the motor truck will ever be a serious factor in long distance freight transportation.

The chief influence of the motor truck as regards the freight situation will be the compelling and marked increase in speed in freight service and this increase in freight traffic speed promises to be the most important change that will be witnessed in the railroad situation in the next decade. The prompt delivery of freight effects such an important economy in the manufacture of commodities that it is doubtful if American industry will ever be satisfied with the uncertain freight deliveries which prevailed previous to 1920.

It is believed that even without the competitive influence of the motor truck the economies effected in industry through the reduction in inventories will force still greater increases in the speed with which freight is delivered from terminal to terminal.

It is believed, therefore, that freight traffic is entering a period of stability marked with a gradual increase in volume considerably less than that which prevailed in the first quarter of this century.

Combination Freight and Passenger Locomotive

The situation as regards the competitive and population influences is mentioned because these influences favor the development of a combination locomotive for either passenger or freight service. Passenger service is on the decrease and, therefore, the investment of heavy plant facilities for the transportation of passengers is not justified.

Freight service, other than products of mines, is subject to a series of conditions that demand operation at speeds approaching that of passenger service. The situation is influenced by a further important factor in that the passenger traffic demands have a tendency to develop certain peaks which happily harmonize with slack demands in freight service.

Therefore, a combination locomotive suitable for heavy passenger service and especially adapted for fast freight service would effect a marked economy in investment in power and in the maintenance of this power. It will be shown that the roller bearing is particularly adaptable to the development of combination freight and passenger locomotives. The interchange of power between passenger and freight pools would permit the transfer in some cases of 200 engines. This effects a corresponding economy in capital investment.

Influence of Roller Bearings on Locomotive Design

The introduction of the roller bearing on driving axles removes all limitations on speed as imposed by the bearing situation. Roller bearings of a size comparable with that required on driver applications are in successful operation in steel mill and industrial service at speeds equivalent to over 150 miles an hour. The roller bearing surrounds the axle completely. The bearing provides a full 180 deg. to take piston thrust in both directions. The bearing encloses the axle at the bottom as well as at the top. These conditions prevent any lifting of the

bearing with respect to the axle and are a principal influence in eliminating driver-bearing pounding. Vibration and pounding of main bearings and rods appear to be eliminated entirely in the roller-bearing locomotive, this result apparently being influenced by the fixed relative location of the driving axles, maintaining thereby correct tram between the drivers and the rods.

Heating is entirely eliminated, not only on driver but on other wheel bearings on the locomotive. The temperature rise of the driver bearings averages 15 to 20 degrees above atmosphere. This condition should result in a material reduction in axle breakage as it is generally recognized that axle breakage is principally due to heat checks resulting from high normal operating temperatures of plain bearings. The maintenance of locomotive bearings, particularly the drivers, should be materially reduced and this is probably the most important advantage following the use of the roller bearing.

The power loss at low speed with roller bearings is relatively low, the loss of power in the bearings being negligible. This condition has the effect of increasing starting power of the locomotive as the high efficiency of the roller bearing applies at very low speeds. This has been borne out in practice as the Timken locomotive has been very effective in starting heavy trains, some of these trains being as high as 9,865 tons, consisting of 134 loaded coal cars. This high bearing efficiency at low speeds permits of satisfactory use of valve events as usually applied to high-speed passenger locomotives.

The experience to date indicates that the roller-bearing locomotive is applicable to high-speed passenger and fast-freight service. It has been very successful in heavy freight service within the limits of its capacity.

Factors Controlling the Design

The decision to build a locomotive* was arrived at with reluctance as it is realized that the Timken Company is not expert on locomotive design and would have much preferred to have proceeded with the locomotive bearing applications on power belonging to the railroad companies. Considerable progress has been made on the application of roller bearings to passenger car equipment, but railroads were very reluctant about the project of assigning a modern locomotive for the complete application of roller bearings, even though this application be made at the Timken Company's expense. Some progress had been made on the application of the roller bearing to the engine truck and tenders and, to a lesser degree, on the trailers, but the indications were that the driver application would, under normal conditions, have hung fire for a period of years. A locomotive so equipped, even at the Timken Company's expense, would be limited as regards experience to the railroad directly interested and the matter of interesting other companies would require duplicating this effort in each case.

It was considered, therefore, that time and expense could be saved by building a locomotive with the object of loaning it for demonstration purposes without charge to the railroads interested in observing the performance of roller bearings.

The roller-bearing locomotive would naturally be compared willfully or otherwise, with the best of modern power constructed within the last ten years, and this condition indicated that the locomotive should be constructed of maximum size and capacity as limited by the clearance conditions permitting operations on the principal roads of the United States.

The wheel diameter was selected as a compromise be-

* For a complete description of the Timken locomotive, see the *Railway Age* for May 24, 1930, Page 1225.

tween prevailing practice in passenger and freight service. The diameter of 73 in., while slightly larger than generally used in freight service, should produce equally satisfactory results in heavy service on account of the higher efficiency of the roller bearing and, on the other hand, higher rotative speed, permissible with the roller bearing, would permit operation in fast passenger service and permit handling any existing passenger schedule.

The boiler was made of sufficiently large capacity to handle heavy trains at high speeds and this factor, together with weight limitations on certain roads, influenced the decision in favor of the 4-8-4 arrangement of wheels.

The weight was held within the limitations imposed by those roads having a maximum of 61,000 lb. per axle, and recognition of the fact that this would limit the capacity of the locomotive on roads permitting higher axle loads led to the development of a duplex weight system whereby a weight of 66,000 lb. per axle is used with 250 lb. steam where heavy axle load is permissible, whereas an axle limit of 61,000 lb. with 235 lb. of steam

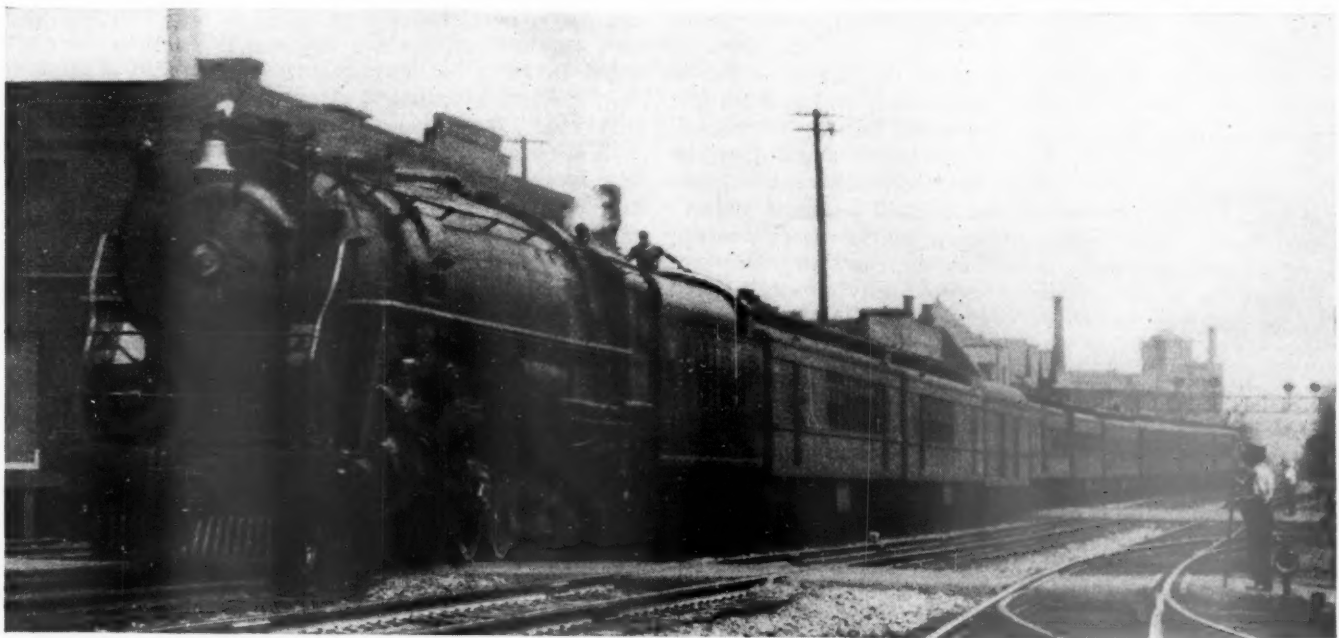
tion of which was effected in a highly satisfactory manner.

Roller Bearing Applications

Roller bearings are applied on the engine trucks, drivers, trailer, tender, booster, train control and valve pilot and flue blower.

The driver bearing is the most interesting application and is an important factor influencing the design of the locomotive. The driver application is of the single-bearing type and provides one row of rolls adjacent to each wheel. Both bearings are mounted in a one-piece housing extending across the frame. The axle unit thus comprises the axle and wheels, bearings and housings, thus insuring absolute maintenance of alinement between these respective parts, irrespective of the condition of rails and oscillation in the locomotive frame.

The use of the roller bearings on axles requires the maintenance of a high degree of accuracy throughout the entire period of locomotive life as regards axle trammings and side-rod spacing. This condition precludes the



The Timken Roller-Bearing Locomotive Hauling a Passenger Train During the Tests

meets the conditions imposed by roads having lighter axle limits.

The cylinder size of 27 in. by 30 in. was selected to develop ample power and utilize the maximum capacity of the boiler.

The development of the maximum capabilities of the roller bearings require that the subject of reciprocating parts be given very careful attention and the specifications given to the locomotive builder of 85 m.p.h. with a dynamic augment not exceeding 10,000 lb. require the use of light-weight reciprocating parts. These involve the use of hollow heat-treated piston rod, one-piece piston, heat-treated nickel-vanadium crossheads and return cranks, and nickel-steel main and side rods. The dynamic augment was still further reduced by the cross-counterbalancing method.

The American Locomotive Company was selected as the builder, the wisdom of this decision being evidenced by the fine spirit of co-operation displayed by the officers of this company. The design of the locomotive to accommodate the roller bearings in an efficient manner presented many difficult engineering problems, the solu-

use of adjustable features and led to the use of the trunnion form of mounting. These trunnion guides, made of hardened roller-bearing steel, are trunnion mounted on integral bosses on the driver housing. The trunnion construction permits maintenance of full-surface contact with the pedestal liners which are also hardened and ground. The piston thrust is thereby transmitted through a hardened-steel train of parts comprising the pedestal liner trunnion and hardened liners welded to the axle housing.

The successful solution of the driver-bearing application accounts for the exceptionally smooth-running of the Timken locomotive throughout the entire range of speeds up to 85 m.p.h. and, in a large measure, for the elimination of pounding while under steam and when coasting. The roller-bearing application apparently neutralizes the destructive effect of the reciprocating parts. The absence of vibration and pounding gives the impression that in some way the reciprocating parts have been thrown out of gear with the closing of the throttle.

The engine-truck application is similar in general design to the driver in that use is made of a single-bearing

ing application, a housing extending across the frame and trunnion guides interposed between the bearing housing and the pedestals of the engine truck. This application has seen extended and very successful use.

The trailer application on both the leading trailer and rear trailer axles is a direct replacement of the plain bearing. These applications are of the double-bearing type, which construction is necessary on outboard applications, on account of the desirability of mounting roller bearings in pairs. The bearing housing for the rear trailer axle is mounted directly in the trailer-truck pedestals in the conventional way, but the front trailer truck is provided with a self-centering lateral-motion device which permits of 2-in. lateral motion of the axle housing and bearing units within the trailer-truck frame. This allows the front trailer axle to float freely on curves as high as 20 deg. and meets fully the requirements of the I.C.C. as regards limited free lateral motion in trailer-truck applications.

The tender truck involves a new departure in railroad bearing application. This application is made in the conventional 6-in. by 11-in. pedestal-type truck widely used in locomotive service. The space limitations require the use of the quad type of bearing having four sets of rolls.

The booster application involves the use of a double bearing on each end of the crank shaft and a quadruple bearing in the idler gear. The roller bearing is particularly applicable to the booster service on account of the intermittent character of this service involving the application of full loads on practically cold bearings and related parts. The higher efficiency of the roller bearing under these conditions materially increases the effectiveness of the booster. This is borne out by the high speed under which the booster operates on the Timken locomotive for considerable periods.

An interesting application is the smokebox and nozzle arrangement developed by W. F. Kiesel, Jr. A distinct feature is the use of a cylindrical netting surrounding a star-shaped nozzle, the nozzle having an overall diameter of 16 in. but an area corresponding with $7\frac{5}{8}$ in. diameter. The length of the surface contact between the exhaust blast and the products of combustion is about six times that of a round nozzle. The object of this development is the reduction in back pressure on the piston.

The Alco lateral motion arrangement is applied on No. 1 driver. The bearing housing and trunnion guides are arranged to permit $1\frac{1}{4}$ in. total lateral motion. This construction permits of operation on a 20-deg. curve. Drivers 2, 3 and 4 have $\frac{1}{4}$ in. lateral.

Experience in Operation

The lubricating system of the locomotive presents an interesting development. The roller-bearing application on all wheels operates in a bath of oil. The experience on the Timken locomotive and on 160 locomotives in service on which some wheels are equipped with roller bearings indicates that lubrication does not require attention more often than two to four times a year. There have been examples of locomotive-bearing application operating for two complete shopping periods without attention to lubricant on engine trucks. There is, however, a possibility of oxidization of the lubricant, entrance of water and grit, and, as a general proposition, the lubricant should be examined within the reasonable periods above mentioned.

The Timken engine has been in service since April, 1930. While the lubricant has been changed once, this being done as a precautionary measure as the wastage at the time of the oil change had been trifling.

The main and side rods, motion work and all spring and brake fittings and pedestal liners are equipped with the Alemite system of lubrication.

Some difficulty was experienced in the early runs with hot side-rod bearings. These bearings were modified, incorporating a Timken hardened-steel liner, press-fitted in the rods. A three-piece floating bronze bushing operates between the hardened liner and the nickel-steel pin. The outside diameters of the floating bushings are crowned and the hardened steel liner reverse crowned to match, the radius being approximately equal to the spacing between drivers. This construction appears to work in a satisfactory manner and has eliminated trouble experienced with the hot rod bearings. This condition is apparently due to the self-aligning principle resulting from the use of the crowned floating bushing and corresponding crowned surface on the liner. The reciprocating motion permits self-aligning, apparently distributing the load over the entire surface of the pin.

Crosshead guides and valve link operates in the open atmosphere and are subject to rapid wear due to the lapping action of atmospheric dust and grit. An effort was made to reduce this wear by the use of roller bearing steel, hardened and ground, in the construction of the crosshead guides, the link and link block. This steel is tempered to hardness in excess of that of silica which is the chief constituent of atmospheric dust and grit. Therefore, such dust as imbeds in the crosshead shoe will not wear the guide to an appreciable extent. It has also developed that the friction is greatly reduced as compared with the use of crossheads and guides composed of soft materials. This is evidenced by the fact that the temperature rise of the cross head shoe and guides is only about 30 deg. above atmosphere. The temperature rise of guides of soft material is very high.

Performance in Service

The locomotive has been operated in New York Central freight service, Pennsylvania freight and passenger service, and Chesapeake & Ohio freight and passenger service. The mileage at the termination of the Chesapeake & Ohio test was 32,893 miles, of which 14,999 miles were operated in passenger service. The operating results to date indicate that the locomotive has been quite successful in both passenger and freight service. It has handled a number of important passenger trains, including the "Sportsman," on the Chesapeake & Ohio and eleven limited and express trains on the Pennsylvania, including some of the 20-hr. New York-Chicago trains. The advice received from the operating departments of the railroads is that the Timken locomotive is one of the finest engines ever built.

The New York Central test comprises 47 runs in freight service handling trains as high as 125 cars, making a total of 4,561 cars which were operated 632,753 car-miles and 24,942,033 ton-miles, including the locomotive. This work was handled with an average coal consumption of 48.75 lb. per 1,000 gross ton-miles. Water consumption averaged 6.87 lb. water per pound of coal. The train performance was at the rate of 48,931 gross ton-miles per train hour. The average train speed was 29 miles an hour.

The Pennsylvania freight record covers 49 runs comprising 10,667 miles, handling 4,558 cars, a total of 931,342 car-miles, equalling 39,910,360 gross ton-miles. The coal consumption averaged 50.6 lb. per 1,000 gross ton-miles with an average water rate of 7.37 lb. water per pound of coal. The train performance averaged 80,078 gross ton-miles per train hour. The average train speed was 32.5.

The freight runs covered the territory from Altoona,

Pa., to Jersey City, N. J.; from Columbus, Ohio, to St. Louis, Mo., and from Crestline, Ohio, to Chicago.

The Pennsylvania passenger runs numbered 23, comprising runs over the mountains from Harrisburg, Pa., to Columbus; between Crestline and Chicago and between Chicago and St. Louis. The passenger mileage was 7,871. The total number of cars handled was 289, making a total of 94,744 car-miles.

The coal consumption averaged 7.81 lb. per passenger car-mile and the water rate was 8.2 lb. water per pound of coal.

The locomotive demonstrated its capacity to run at speeds necessary to handle the fastest passenger schedules in the United States. A surprising ability in acceleration and in maintaining high average speed on grades were the principal advantages of the 4-8-4 type locomotive over the Pacific type.

The Chesapeake & Ohio freight runs numbered six, covering 769 miles, handling 822 cars, and making a total of 103,572 car-miles and 5,074,432 gross ton-miles, including the locomotive. Coal consumption averaged 35.66 lb. per 1,000 gross ton-miles, with a water rate of 6.94 pounds of water per pound of coal. The work rate averaged 148,289 gross ton miles per train hour. These runs were made over the Ashland division between Russell, Ky., and Silver Grove (Cincinnati), Ohio. The average speed was 25.2 m.p.h.

Twenty passenger runs were made on the Chesapeake & Ohio on the "Sportsman" between Toledo, Ohio, and Clifton Forge, Va., and on passenger trains between Clifton Forge and Charlottesville, Va. The total mileage was 7,128, handling 177 cars, a total of 57,795 car miles. Coal consumption averaged 9.8 lb. per passenger car mile with a water rate of 7.9 lb. water per lb. of coal.

Summary of Tests

These tests indicate that the roller bearing provides a means of developing a combination engine which is capable of handling all freight service with the exception of the heavy drag coal service, and which, without making any changes whatever, will handle any passenger schedule in the United States and do both jobs in an efficient manner. The coal consumption was less than half of the average of that on the road on which it was operated. As against this, however, the train selections are favorable to the locomotive as all the tests were made on through runs. The coal and water figures, however, include all stand-by losses.

The locomotive was not designed for heavy drag service but has handled trains comprising 132 cars, totalling 9,864 tons, excluding the locomotive, starting these trains without difficulty. The locomotive also handled coal trains weighing 8,500 tons over the rolling country between the Ohio River and Columbus, Ohio. The valve events, however, are not proportioned for this heavy drag service, but the experience indicates that while the locomotive is designed for heavy passenger and fast freight service, it will give a good account of itself in heavy slow freight service.

The roller bearing in locomotive construction has improved the reliability of the machine. The Timken engine has been in service since April 15 and has taken every train into the terminal. It has started every train without issuing calls for a helper, notwithstanding some starts were made on momentum grades where the trainmen were of the opinion that the regular plain-bearing locomotives would have required a call for help.

The locomotive has handled 12 steel cars up the Allegheny grade at Gallitzin without a helper and with this train saved three minutes on the standard mountain schedule.

Coasting—Free coasting is one of the outstanding features of the Timken-equipped locomotive. This feature accounts for the exceptionally smooth riding characteristics of passenger trains handled by the Timken engine. It has been observed that in coasting at high speed at 70 m.p.h., the train crowds on the engine and takes on the slack of the coupler but that the effort of one man will overcome the difference in rolling friction between the locomotive and the train and extend the coupler. This has been demonstrated repeatedly and doubtless accounts in a large measure for the exceptionally smooth passenger train operation behind the roller-bearing engine. The rolling characteristics are sufficiently smooth that a number of times the fireman has not observed that the engineer has shut off the steam, this being due to the absence of pound in the engine and the absence of surging between the engine and the train.

Starting—The starting friction of the roller bearing is about 1/20 that of the plain bearing. The engine weighs 711,000 lb. and this would indicate that 95 per cent of this weight can be added to a train on level track without an increase in the starting effort. This amounts to, say 650,000 lb. Reduced starting friction also applies to the excess load due to piston thrust which would be the equivalent to the weight on the drivers, multiplied by the adhesion factor, or say 1,000,000 lb. The reduced starting resistance would apply on say 900,000 lb. of this figure. The experience therefore indicates that the roller bearing engine exercises an influence in the direction of smooth starting equivalent to a reduction of 750 tons in the train.

Bearing Temperature—The roller bearings run practically cold. A number of trainmen commented to the effect that it was the first locomotive they had ever seen with frost on the driver bearings. The temperature rise of the engine truck and drivers is about 15 deg. above atmosphere. That of the trailers is slightly higher, about 30 deg. The tender runs still warmer—about 40 deg. to 50 deg. above atmosphere—this difference being probably due to the more effective air-cooling of the bearings on the leading wheels.

Economy in Coal and Water—It is not possible to explain the surprising results in reduced consumption of coal and water by the presence of the bearing alone. The best judgment indicates that the roller bearing saves between 10 per cent and 20 per cent of the total power development, the wheel bearing friction being practically eliminated. Final tests have not determined the machine efficiency.

The interesting feature is that the saving, due to the roller bearing, is applicable directly to the rail and this saving is compounded throughout the various features of the locomotive. If it is assumed that a certain amount of work is to be done, which is limited by train size, the power saving in the bearings effects, first, an economy in the cylinders due to early cutoff, involves corresponding reduction in consumption of steam. This, in turn, involves a second reduction in blast at the nozzle and effects more uniform draft conditions in the smoke box. The saving in one and two reduces the demand on the boiler and results in the working of the boiler at a higher point on the boiler efficiency curve, effecting a still further reduction in power. One, two and three react together to effect a reduction in demand on the furnace and permit again the operation of the grate on a proportionately higher point on the efficiency curve.

The saving in power at the wheels is therefore compounded four times, and this feature is believed to account for the economy in fuel and water which could not be accounted for by the saving in bearing friction alone.

Adhesion Ratio—The adhesion ratio on the Timken engine is 4.14. Notwithstanding this conservative adhesion ratio the engine is very slippery, much more so than plain-bearing engines with an adhesion ratio of 4.0. It compares closely as to slipping on the rail with the Lackawanna 4-8-4 type which has an adhesion factor of 3.67. The indications are that the use of roller bearings on the drivers requires, other things being equal, the addition of $\frac{1}{2}$ full point to the adhesion factor. This would indicate a saving of $12\frac{1}{2}$ per cent in power and this probably applies through the entire range as the Timken engine is inclined to be slippery not only at starting but also at high speeds above 50 m.p.h.

Summary and Deductions

A complete locomotive test has not yet been made, but the data thus far available indicates that the following points can be stated:

Thermal efficiency has reached a maximum of 7.04 average for a division run. The thermal efficiency is reduced with slippery rail on account of loss of steam in slipping. The data thus far available indicates that the engine approximates the Cole formula curve up to 15 m.p.h., but is 25 per cent above the Cole curve at 40 m.p.h. Drawbar horsepower readings without booster show 2,500 hp. at 18 m.p.h.; 2,870 hp. at 20 m.p.h.; 3,170 at 24; 3,470 at 27; 3,770 hp. at $29\frac{1}{2}$ m.p.h. and 3,900 hp. at $36\frac{1}{2}$ m.p.h. The coal rate per drawbar hp.-hr. has averaged from 2.58 to 3.27 lb. of coal, and the water rate from 18.76 to 22.1 lb. These were based on run-of-mine coal with no deduction for moisture.

The experience with the Timken engine to date indicates that we are on the eve of a decided revolution in locomotive construction. The continuation of the demonstration for a distance of 100,000 miles with results to date would indicate that no railroad would be justified in using plain bearings on a locomotive in view of the improvement in reliability and reduction in maintenance promised by the Timken locomotive.

The Timken engine experience gives promise of effecting a reduction, not only in maintenance of power, but also in maintenance of rolling stock, due to the absence of shock and smooth running of the roller-bearing engine, but in addition to this promises an immediate reduction in transportation costs following higher speed and greater reliability of the roller-bearing locomotive.

Changing economic conditions throughout the United States point to a gradual increase in speed of train movements. This speed is already limited by the plain bearing and a desirable increase in speed can be obtained through either the improvement in the plain bearing or the introduction of the roller bearing. It is generally conceded that the plain bearing has reached its limit of development and the experience with thousands of passenger cars, a complete freight train and the Timken locomotive point emphatically to the introduction of the roller bearing as the next important improvement in railroad operation.

The passenger car, bus, and motor truck are important factors in our transportation situation and the influence of these factors points in the direction of greater reliability, more comfort and higher speed. The roller bearing has made the passenger automobile, the bus, and the motor truck, and the roller bearing will also provide the means whereby the railroad can most successfully and effectively combat the loss of traffic arising from these agencies.

THE CANADIAN PACIFIC, beginning January 29, will place its steamship *Duchess of York* in service for passengers between New York and Bermuda, sailing once a week.

Central Energy System for Trains

(Continued from page 1172)

Three of the train lines are used for the 220-volt power system.

Suitable jumpers, plugs and receptacles are available for electrically connecting one car to another where the standard MCB coupler is used. These are placed to one side of the car coupler and the steam and airbrake hoses. The act of pulling a plug from a receptacle kills the circuit. This protects the operator from the danger of shock and avoids burning of contacts.

The Turbine Generator Set

The turbine-generator set is located on the front of the locomotive, above the pilot beam and below the smokebox. A two-inch steam pipe is used to carry steam to the turbine. The exhaust pipe is 5 in. in diameter, passes through the smokebox and terminates immediately in front of the stack. It is fitted with flanges to permit its removal from the smokebox and to allow removal of superheater units.

The rotor of the generator is the field and it is made with slots including two windings, one of which is connected across the exciter and the other across the terminals of a current transformer, the primary of which is in series with the load. Three collector rings are employed, two making the necessary contact for the winding directly across the exciter. The third ring is split in two halves, with each half connected to the second or compounding winding on the rotor. The secondary leads from the current transformer are tied across the brush holders on the split ring and thus into the compounding winding. The ring, which is split in two halves, is really a two-segment commutator and the current into the compounding winding is rectified in this manner.

The compounding of the unit is therefore a direct function of the line current, the same as an ordinary direct current compound-wound generator. By changing the ratio on the current transformer, it is possible to control the amount of current to the compound winding and obtain any desired degree of compounding.

Service Test

The equipment was tested with full load under regular service conditions. The load was provided by resistors and a 4 hp. motor to supply additional inductive load. The motor was started directly across the line. With a total load, both inductive and non-inductive, of 86 amperes, the voltage drop at the rear of the train was 20 volts, or 10 per cent, the train line including three sets of Tomlinson couplers.

THE CAR SERVICE DIVISION of the American Railway Association has reopened the office of car service agent at Portland, Ore.

A DIRECT FREIGHT TARIFF for shipments from western Europe to far eastern countries via Lithuania, Latvia and Soviet Russia has been established as a result of negotiations recently concluded between the railway administrations of Germany and the three countries mentioned above, and Japanese and Chinese railways and shipping companies, according to press reports received by the Department of Commerce. The international way bill has been accepted as the uniform shipping document to be used in this service. The new direct tariff covers some 74 commodities and provides two routes, one via Vladivostok, with connections to the principal Japanese ports and railway centers, and the other via Harbin, southern Manchuria and Chosen. The Soviet Russian government has agreed to expedite transportation over its territory, which will require from 22 to 30 days.

Toledo Terminal Installs

Simplified Interlocking System

for Swing Bridge

Operation speeded by making either end of the swing span fit either shore span—Centralized control machine is used

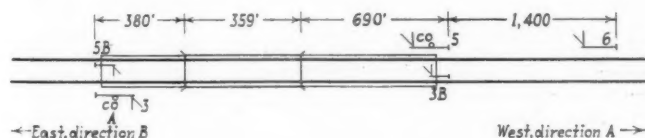
A VERY simple and effective system of interlocking and signal protection has been developed and installed on the new double-track Maumee river bridge of the Toledo Terminal Railway at Toledo, Ohio. This railway is a belt line circling the city and connecting the various yards and lines of several railroads. The traffic consists of freight trains only, many of which are handled by engines and crews of the foreign roads, although the Terminal Railway operates its own trains as well, all train movements being made at limited speeds.

The section of the line in question was formerly double track, except for the single-track bridge over the Maumee river. In 1928, the traffic comprised 80 or more trains daily and there were many excessive delays at this point. Therefore it became obvious that this bridge would have to be double-tracked if the traffic were to be handled properly. Accordingly, a double-track bridge was installed and was placed in service in May, 1930. The swing span of this new bridge is 353 ft. long and provides a 140-ft. channel on each side of the center pier.

On the old bridge there was a six-lever electric interlocking plant which included the control of the signals and power switch machines for the switches at the two ends of double track, located approximately 800 ft. and 1,100 ft., respectively, from the east and west ends of the bridge. This interlocker was discarded when the new bridge was completed.

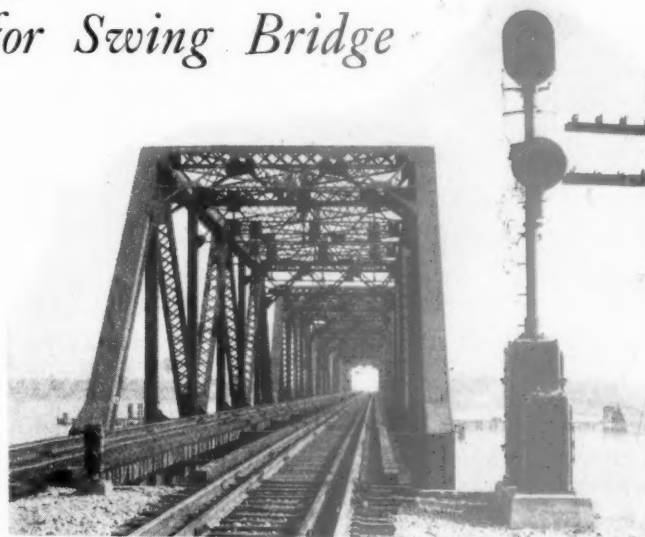
Operating Requirements

The Maumee river is in reality the harbor of Toledo, and therefore the river traffic is heavy, requiring the bridge to be opened as many as 50 times in 24 hours. With a daily rail traffic of 60 to 80 trains, every second that



Track and Signal Plan

can be saved in the operation of the bridge is important in reducing train delays. This fact was of first importance in the design, not only of the signal system, but of the bridge itself. As a result, only two minutes are required from the time the towerman throws the first interlocking lever until the span is fully opened. The new interlocker, which includes no mechanical locking, is



Signals Governing Train Movements Over the New Bridge

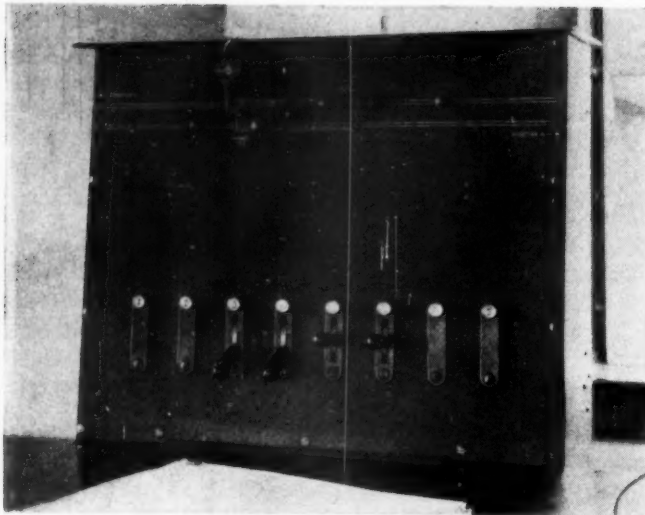
an important feature contributing to this reduced time of operation. In brief, the system consists of a unique application of the General Railway Signal Company's single-wire centralized control type of machine and circuits.

The bridge is operated by two 50-hp. motors located on the center pier. A similar motor at each end of the span is used not only to lift the rails, but also to force large wedges under the end bearings of the bridge to take the 1½-in. deflection out of the bridge span and to carry the load at the end. Through a system of interlocked relays and controllers it is so arranged that all signals must be in the stop position and all track circuits between home signals must be clear, or the release locking effective, before power will be supplied to feed the motors for the operation of the wedges and rail lifts, or to turn the bridge. The release locking is effective for movements in the normal direction as soon as the train has cleared the draw span.

Operation of Interlocking

The normal position of the lift rails and the bridge wedges is checked by lock rods and plungers which are operated by a G.R.S. Model-5 a-c. switch machine on each end of the swing span. When the bridge is closed, the rails down, and the wedges home, lever No. 4 in the interlocking machine is thrown downward, thereby causing these two switch machines to operate, and if all functions are in the correct position so as to complete the operation, this fact is indicated by a red light being extinguished on that portion of the track diagram representing the bridge. As long as this light remains extinguished, the towerman knows that the bridge is set and locked for rail traffic. The track circuits are carried across the rail joints at each end of the swing span through a Stiles four-way electric bridge circuit controller, which is operated also by a connection from the switch machines mentioned above.

If a westbound train enters the approach section, the



A Centralized Control Machine, with Four Working Levers, Controls the Bridge Locks and Signals

towerman hears the annunciator bell and a green light appears on the approach section of the track diagram. If the towerman wants the train to go through, he throws lever No. 3 upward, thereby causing signal No. 3 to change from the red to the green indication. If the lever is left in the "up" position when the train passes the signal, the signal automatically displays a call-on indication which is retained while the train is on the bridge track circuit. When the train leaves the bridge track circuit the signal automatically becomes red unless a following train is on the approach section. The signals are, therefore, stick controlled for trains that do not follow closely, but the towerman is relieved from operating the lever for each train when they follow less than a track section apart. In case an approaching eastbound train is running on the normally westward main track, the leverman throws lever No. 3 downward, thereby causing dwarf signal No. 3B to change from the red to the yellow indication, provided the track circuits on this track are not occupied. Signals No. 5 and No. 5B are similarly controlled by lever No. 5.

Signal No. 6 is one that was installed especially to hold long trains at that point when the towerman knows that the bridge must be opened, since if he were to let a train of over 20 cars pull up to signal No. 5 before stopping, the train would block an important street crossing.

It is, therefore, seen that this small machine with only four levers, not only serves to check the position of the bridge and lift rails, but also controls the operation of signals to direct trains in either direction on either track, including call-on signals for the normal direction. The illuminated track diagram has lights to indicate the presence of a train on each track circuit, while an annunciator bell rings when a train enters, and again when it clears, each track circuit, to call the towerman's attention to the fact.

Bridge Will Swing 90, 180, or 360 Degrees

Furthermore, all these functions of the swing span are controlled by only eight wires, which fact contributed to the possibility of installing a signaling system that would permit swinging the bridge through a complete revolution or continuing to turn it in either direction. Either end of the swing span will connect with either shore span, and the interlocking machine and signals will function properly regardless of the position of the span. This is the first large bridge equipped with interlocking to be so operated. The importance of being able to secure

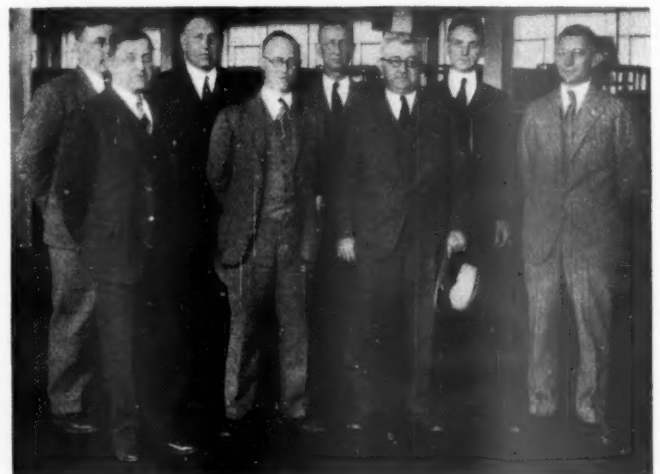
such results is that in many instances when a boat is moving at an average speed, it is practicable to swing the bridge from its closed position just ahead of an approaching boat and continue the swinging through an arc of 180 deg. with the other end following the receding boat, thus closing the bridge again without stopping and reversing it at the center position. This method frequently saves several minutes in letting a boat pass, and materially lessens the hazards of a boat colliding with the bridge, as the bridge is, in practically all cases, moving in the same direction as the boat.

Special Contactor Around Center Pinion

The requirement that the bridge be designed to swing in either direction prevented the use of a direct cable connection from the center pier to the movable span as the cable would be twisted off if circumstances made it desirable to rotate the bridge in the same direction in several consecutive openings.

The problem was solved by constructing a set of contact rings eight feet in diameter surrounding the fixed center casting of the swing span and attached thereto. Eight of the contact rings are for signal control circuits and the remainder are for the dispatcher's telephone and local telephone circuits, which also continue to function regardless of the position of the swing span. These rings are made of 1/4-in. by 1 1/2-in. copper with the larger dimension in the horizontal plane, thus presenting a 1/4-in. edge against the spring-mounted contact shoes, which are supported on the swing span. Each ring and each contact shoe is, of course, mounted on insulating brackets. These contact shoes are staggered in their grouping on the contactor so as to eliminate the possibility of one shoe coming in contact with another. The large face of the contactor, 1 in. by 2 in., was needed on account of the rocking motion of the span in a heavy wind. Two brushes connected in multiple are provided for each ring, the two sets being mounted less than 90 deg. apart so that every time the bridge is moved one set will rest on a portion of the ring just cleaned by the movement of the other set. This unique controller was developed and built by the General Railway Signal Company and was designed in co-operation with the engineers of the Terminal Company.

* * *



Railway Supply Officers Inspecting New Stationery Store of Pennsylvania at Pittsburgh

Left to right, back row: S. Meyers, gen. stkp., L. & H. R.; J. S. Genter, gen. stkp., L. & N. E.; C. B. Hall, str. mgr., Penna.; W. H. Whaley, stationery stkp., Penna. Front row: W. H. Morris, gen. stkp., Reading; O. A. Donagan, gen. stkp., B. & M.; C. B. Tobey, gen. stkp., L. V.; E. W. Walther, gen. stkp., B. & O.

Charles H. Markham Dies

Demise occurred at Altadena, Cal., following paralytic strokes which terminated year's illness

CHARLES HENRY MARKHAM, chairman of the board of directors of the Illinois Central System, with headquarters at Chicago, died at his winter residence at Altadena, Cal., on November 24 as the result of a succession of paralytic strokes, the last of which came three days before his death.

Lawrence A. Downs, president of the Illinois Central and a railway officer who gained a large part of his experience with Mr. Markham as his superior, made the following comments concerning Mr. Markham's career:

"Mr. Markham was an exceptionally able leader. He was a forceful and effective advocate of justice for all railroads before the bar of public opinion, where he won the confidence of millions by his frankness and sincerity. He was a devoted champion of the Middle West and the South, and his influence upon their economic development was far reaching. He was also a loyal friend of the members of his organization and all his other associates.

"I never knew a kindlier man. Mr. Markham loved people, and he was loved by all who knew him. He placed implicit confidence in his business associates, and it is a tribute to his choice of men and his capacity for stirring their hearts that his confidence was so often rewarded by outstanding results. Mr. Markham came into the leadership of the Illinois Central organization under the handicap of being an outsider, but that handicap was quickly overcome by the appeal of his winning personality, and members of our organization in all ranks of service and all stations in life regarded him with the deepest affection.

"Mr. Markham's life was a shining example of purposeful living, and it was richly rewarded by the success of his undertakings and the esteem of countless friends. His memory will go down in the history of our road as that of a great leader."

Mr. Markham ranked among the greatest executives in the history of American railroading, and he possessed in a very unusual degree a combination of the qualities needed by railway executives during the period from 1911, when he became president of the Illinois Central, to 1926, when he became chairman of the board.

When he left the railroad business in 1904 to enter the oil business he had had a railroad experience of almost a quarter of a century, most of which had been gained as a traffic, operating and executive officer. When he returned to the railroad business in 1911 it was confronted with important new problems. Under the

influence of a hostile public sentiment, Congress had empowered the Interstate Commerce Commission to pass upon all proposed advances in rates, and at just about that time the commission rendered its decisions refusing the first general advances in rates for which the railways asked after the adoption of effective federal regulation.

Mr. Markham had a remarkably keen appreciation of the importance of public sentiment, and no business leader ever knew better the most effective means of influencing the thinking and action of large numbers of people. In consequence, throughout his career as a railroad president he was recognized as a leader in the work of creating a favorable public sentiment toward the railways among both their employees and the public.

Under his direction, work of this kind was carried on most effectively on the Illinois Central, and his influence in helping to create a friendly attitude among railway employees and the public extended throughout the country. He was chairman of the Western Railways Committee on Public Relations for several years and until his death.

His unusual aptitude for influencing people's thought and action was but one of the qualities that made him a great railway executive; but it was so important in his case largely because of the effects that it produced upon the morale of the employees of the railroad system of which he was long the head. He once remarked that his early ambition had been to be the president of a railroad small enough for him to know personally every one of its employees. He added that while fate had made him president of a much larger system he had become personally acquainted with as many of its

employees as possible. His personality was an unusually attractive one, and under his management the Illinois Central System came to have employees who, as a whole, were as loyal to their railroad and its head as those of any railroad in this country. The effects upon its operating efficiency and service were extremely important.

He showed broad vision in the development of the Illinois Central system. He boldly made huge capital expenditures to enlarge its capacity, reduce its operating costs and improve its service. These included the large expenditures made for the electrification of the Chicago terminal. The increase in fixed charges that these capital expenditures caused is being found burdensome by the management of the road under pres-



Charles H. Markham

ent business conditions; but Mr. Markham was looking far ahead, and doubtless within a few years his work will be vindicated by its results. One of its results has been the creation of valuable air rights in Chicago.

One of Mr. Markham's most outstanding qualities was his gift for selecting and developing able men. The "Markham men" that he started on the ladder of promotion from subordinate positions have included L. A. Downs, who succeeded him as president of the Illinois Central; L. W. Baldwin, president of the Missouri Pacific; John J. Pelley, president of the New York, New Haven & Hartford; A. E. Clift, president of the Central of Georgia, and the late Charles M. Kittle, who left the position of senior vice-president of the Illinois Central to become president of Sears, Roebuck & Company. Once he had given a man his confidence he offered him every opportunity to show the kind of stuff that was in him, and his success was due not only to his own vision, courage and planning, but also to the initiative and ability he developed and encouraged throughout his organization.

In his private life Mr. Markham was one of the most genial and pleasing of companions. He worked with enthusiasm and energy and played golf and enjoyed social life in the same way. His constant activity in both his business and his private life undoubtedly involved over-exertion that undermined his constitution, with the result that he did not have enough reserve power to resist the severe illness with which he was attacked five years ago, and which largely incapacitated him during the rest of his life and caused his untimely end when he was less than 70 years old.

Mr. Markham was born at Clarksville, Tenn., on May 22, 1861, of immigrant parentage. After living for a time in Addison, N. Y., he went to Kansas City, Mo., at the age of 17 years and obtained employment as a laborer in a packing plant. At the age of 20 years Mr. Markham entered railway service as a section laborer on the Atchison, Topeka & Santa Fe at Dodge City, Kan., becoming a station helper on the Southern Pacific at Deming, N. M., several months later. He advanced through various positions at Deming, including that of baggage master, and was subsequently for 10 years station agent on the Southern Pacific at Lordsburg, N. M., Benson, Ariz., Reno, Nev., and Fresno, Cal. At Fresno he was also in charge of freight and passenger solicitation. From July, 1897, to September, 1901, he was general freight and passenger agent of the Oregon lines of the Southern Pacific at Portland, Ore., and he was then promoted to assistant freight traffic manager at San Francisco, Cal., after which he was elected vice-president of the Houston & Texas Central at Houston, Tex. From April to November, 1904, he was general manager of the Southern Pacific at San Francisco and for a portion of that time he was also vice-president. For the following six years Mr. Markham was out of railway service, serving as general manager of the Guffey Petroleum Company and as president of the Gulf Pipe Line Company and the Gulf Refining Company at Pittsburgh, Pa. He returned to railway service on January 12, 1911 as president of the Illinois Central. In February of the same year he was also elected president of the Central of Georgia and the Ocean Steamship Company of Savannah, both Illinois Central subsidiaries. In April, 1914, he became chairman of the board of directors of those two subsidiaries. During the World War he was regional director for the United States Railroad Administration in the Southern region and in the Alleghany region. He had been chairman of the board of the I. C. since September 15, 1926.

Secretary Hurley Defends Waterway Policies

WASHINGTON, D. C.

PATRICK J. HURLEY, Secretary of War, in an address before the Mississippi Valley Association at St. Louis, Mo., on November 24, replied to criticisms of the government's waterways policy made by President Willard of the Baltimore & Ohio in a recent address. Secretary Hurley said that the government had aided in the development of the railways in their pioneer days and is now aiding the merchant marine, highway transportation and aviation, and that the government "has played no favorites in its support of our various transportation systems" but each has its own mission in which it supplements all of the others. Secretary Hurley said in part:

Recently one of the most outstanding railway men of our time was quoted in the newspapers in opposition to the government plan for the development of inland waterways. He is a man who has rendered meritorious service to the government and whose character and attainments are unexcelled. I quote him not for the purpose of criticizing him, because his statement, in my opinion, represents the clearest and most reasonable attitude of the opposition to the development of waterways that I have read. The gentleman to whom I refer is Mr. Daniel Willard, president of the Baltimore & Ohio Railroad.

Mr. Willard said: "We may well question the propriety of government investments of money that has been raised by taxation from all the people in facilities for carrying freight upon the inland waterways in competition with the railroads at rates that are in no sense remunerative."

That argument is the same as was made against the railroads themselves more than half a century ago, when the government was giving land and spending money lavishly to enable the railroads to achieve financial success and to put them in a position where they could be operated successfully by private enterprise.

Mr. Willard is also reported to have said: "I recognize that much may be said in support of a policy whereunder the government will spend money raised by taxation for deepening and improving the rivers so that they can be made navigable, but, having done that, and then having made such facilities available for service practically free of cost, if private capital will not or can not operate boat lines on such waters on a basis to justify private investment, then I submit that such operation by the government is economically unsound and cannot be defended from any fair and reasonable standpoint and ought not to be continued."

The condition which Mr. Willard so ably describes brought about the organization by the government of the Inland Waterways Corporation. This corporation was instituted for experimental purposes. Its chief object is to design craft that can successfully operate on our inland streams. The power boats and the barges designed and built under the direction of that corporation are for the purpose of ascertaining the kind of craft that will carry the heaviest load in the shortest time and at the lowest cost. That is to say that the government is striving to ascertain the most economical craft for operation on the inland streams. The answer to Mr. Willard's argument lies in the fact that on the Ohio, the Black Warrior, and portions of the lower Mississippi, private lines are now profitably operating. On some portions of the Mississippi river and on the Black Warrior, the Inland Waterways Corporation is already operating at a profit. I have on another occasion outlined conditions on the achievement of which the property of the Inland Waterways Corporation will be for sale to private enterprise. The government does not intend to stay in the transportation business after it has succeeded in doing for waterways what it did in years past for the railways. Transportation is the life of commerce, and commerce is essential to progress and civilization. The commerce created by waterway transportation will add to the general prosperity of the railways.

The railroads are not justified in looking upon the development of our inland waterways with fear or enmity. Any plan that brings the ocean-front nearer the heart of the continent and connects it with improved navigation on our inland rivers will never work to the disadvantage of our national railroad system. Water highways have their own economic mission. They can move bulk freight more cheaply than any other means

of transportation. The cheap transportation of bulk freight and raw materials means the furthering of our industrialization. The expansion of our industries means increased quantities of finished and fabricated products. The railroads will always remain the carriers of these products of industry. It means increased business for the railroads when the cities on our rivers begin the construction of wharves and terminals to handle heavier freight. River-rail terminals mean the transfer of freight from boats to trains. Rail and water transportation are supplementary, not competitive. Whatever high state of development water transportation may reach, the railroads will remain the backbone of our national freight transportation system. As they feed tonnage to the barge lines to the same degree will they receive tonnage from them.

The future development of the Mississippi valley alone will tax our pooled transportation facilities to their utmost. When we have made this great valley safe from floods and given it a cheaper means of transporting its goods to market, it will be just entering upon its period of greatest development. Rivers, highways, air lines and railroads will find the volume of its freight as much as they can handle. As our population increases the railroads will, of necessity, turn to the carrying of freight demanding expeditious delivery. The work of transporting raw materials, fuel and heavy bulk commodities, the value of which is not affected by relatively slow delivery, must then be left to other carriers. The waterways will fulfill that function without detriment to the railroads.

We must seek the coordination of railroads, waterways, highways, pipelines and airways. The nation's increasing industrialization demands all these. It will support all of them and the closer they are coordinated the more will they prosper, each in its own domain.

I. C. C. Requires Bonds Be Sold to Highest Bidder

WASHINGTON, D. C.

IN authorizing an issue of \$1,000,000 of refunding and improvement mortgage $4\frac{1}{2}$ per cent bonds by the Indianapolis Union, Division 4 of the Interstate Commerce Commission has imposed a requirement that the bonds be offered for sale at competitive bidding and sold to the highest bidder, although they had conditionally sold to the Union Trust Company of Pittsburgh at $97\frac{1}{4}$ and accrued interest some three months before the application was filed with the commission.

At the same time the commissioners used language giving an intimation that the rule of requiring competitive bidding which has been generally applied since 1926 in the case of equipment trust certificates may hereafter be applied generally in the case of mortgage bonds of terminal railroad companies guaranteed by strong proprietary companies. Such a condition was imposed in an order entered March 10, 1924, in the case of an issue by the Chicago Union Station Company, but the bonds were not sold at once and later in the year the order was amended so as to remove the requirement that they be sold to the highest bidder after a public advertisement and the sale of the bonds to five banking houses was authorized at a fixed price which the report said was approximately the current market quotation and "no doubt as good a price as could be obtained by competitive bids." This price was $92\frac{5}{8}$, whereas it had been proposed to sell the bonds earlier at 86.5. The report in the Chicago Union Station case contained an expression of views as to the advantages of marketing such bonds through competitive bids and a further expression of such views as applied to equipment trust certificates was given in a report approving an issue of Western Maryland certificates in 1926 which commended the company for having obtained bids. Since then the commission has imposed such a requirement in its authorizations of equipment certificates except where special reasons were present.

In the Indianapolis Union case, decided November 20, Finance Docket No. 8501, the report by Commissioners Meyer, Eastman and Mahaffie said: "The mortgage bonds of a terminal railroad company, guaranteed as to the payment of principal and interest by several strong trunk-line carriers controlling the former, and using its facilities, are a class of investment securities comparable in many respects with equipment-trust certificates. Current quotations for bonds of the Chicago Union Station Company, the Cleveland Union Terminals Company, and the Cincinnati Union Terminal Company, as well as for the bonds of the Indianapolis Union, indicate that the bonds of these terminal companies stand high in the railroad bond market. We are of the opinion that the proposed bonds of the Indianapolis Union constitute a class of security that may be marketed through competitive bidding as easily and as advantageously as equipment trust certificates. Our order herein will require that they be offered for sale at competitive bidding and sold to the highest bidder pursuant to the regulations prescribed by our order in Ex parte 54, 56 I.C.C. 847."

The bonds are to be guaranteed by the New York Central, the Pennsylvania and the Cleveland, Cincinnati, Chicago & St. Louis.

The commission also, in this case, departed from its fairly general practice of approving the sale of bonds at prices fixed beforehand by conditional sale arrangements.

It had given warning that it might do so in the case of a New York Central bond issue in 1920 at the beginning of its administration of section 20a of the law, under which it regulates security issues.

Subject to the commission's approval the Indianapolis Union had arranged to sell its Series A bonds to the Union Trust Company, at $97\frac{1}{4}$ and accrued interest, on July 23, 1930. By reason of delays caused by review and discussion of the terms of the proposed mortgage, the guaranty agreement and other papers and legal matters involved, the application for authority to issue the bonds was not filed with the commission until October 1. During the period which elapsed, the report says, "the market for railroad bonds has improved and it is admitted that if the bonds were to be offered now it is probable they would bring a higher price." The report continues:

It is urged, however, that if the price was reasonable at the time the negotiations were had we should authorize the sale of the bonds at the agreed price notwithstanding the improved market for bonds; that there are times when it is important to take immediate advantage of a favorable market; that if in passing upon applications for authority to issue securities we regard only the market conditions at the time the application is acted upon, and disregard conditions at the time the agreement of sale was made, the result would be that carriers would not secure as high prices for their securities as could otherwise be obtained in cases where our authorization shall not have been previously obtained, because prospective purchasers would be unwilling to take the risk of a decline in market prices and of having left on their hands a disadvantageous bargain, while if the market improved their offer would fail because of our refusing to authorize the sale of the securities at the agreed price, and that under such circumstances carriers would not be in a favorable position to negotiate for the sale of securities for the purpose of taking advantage of a satisfactory market.

We are not impressed with these contentions. The Indianapolis Union would have us close our eyes to the market conditions at the time the application is before us for consideration and look only at the conditions obtaining at the time the tentative agreement of sale was made. It is more than three months since the negotiations were completed for the sale of the series-A bonds and the filing of an application for authority to issue the bonds was delayed nearly as long because the applicant had not been able to prepare the necessary papers, documents, and instruments to support the application. If carriers make agreements for the sale of their securities when they can not file promptly the requisite applications for authority to issue the securities, they necessarily assume the risk of changes occurring in the securities market before they receive the neces-

sary authority. At the beginning of our administration of section 20a in *Bonds of New York Central R. R.*, 65 I. C. C. 172, we said:

It developed at the hearing that the proposed collateral-trust bonds had been sold on August 20, 1920, subject to our authorization. While the law does not prohibit such a conditional sale in advance of approval of an issue of securities; carriers should realize that we shall not be controlled in our action by representations that failure to accord approval of issues conditionally sold will result in disturbance or disarrangement of plans based upon anticipated approval.

Turntables Used in New Type Railway Crossing

A NEW type of railway crossing, which is designed to eliminate the gaps in the running rails where the flangeways cross, has been developed by the Continuous Rail Crossing Corporation, Los Angeles, Cal. The continuous principle of the crossing is based on four individual turntables, one of which is situated at each rail intersection of the crossing so that a flangeway groove in the top surface of the turntable may be turned to coincide with either rail, depending on which route is to be used over the crossing.

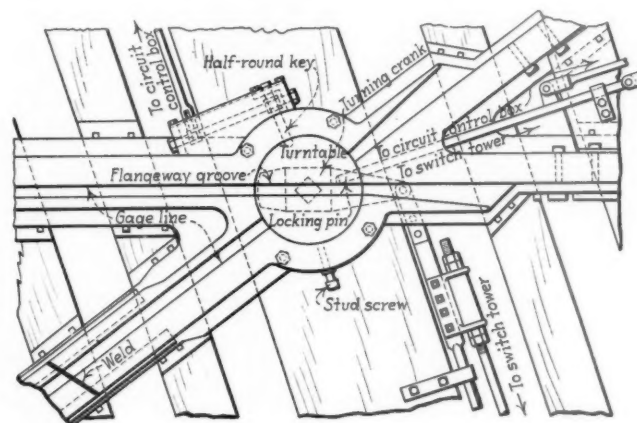
For the complete control and operation of the turntable and the handling of trains over the crossing, an electro-mechanical interlocking layout is provided. This interlocking plant assures that the turntables are all properly aligned and locked before a train is allowed to pass over the crossing.

One of the crossings was installed at an intersection of the Southern Pacific and the Union Pacific at South Gate, Cal., on September 1. This crossing consists primarily of a two-piece casting of manganese steel having circular wells to receive the turntables. The castings are supported on four circular cast-steel pedestals, one of which is situated under each turntable. The pedestals, which are in turn supported on heavy timbers, have suitable openings for the entrance of the control mechanism.

The turntables, which are made of forged, heat-treated chrome-vanadium steel, are 15.99 in. in diameter, 5 in. deep and have a pivoting leg extending down into the pedestal to a connection with the turning mechanism. Each turntable is locked in position by a pin extending into one of two radial holes in the circumference of the turntable, there being a hole for each position of the

turntable. The movement of the locking pins is controlled mechanically from the tower and an electrical circuit is provided which assures that the turntables are all locked. Another independent electrical circuit assures that the turntables are aligned in the right direction before the signal for the route is cleared.

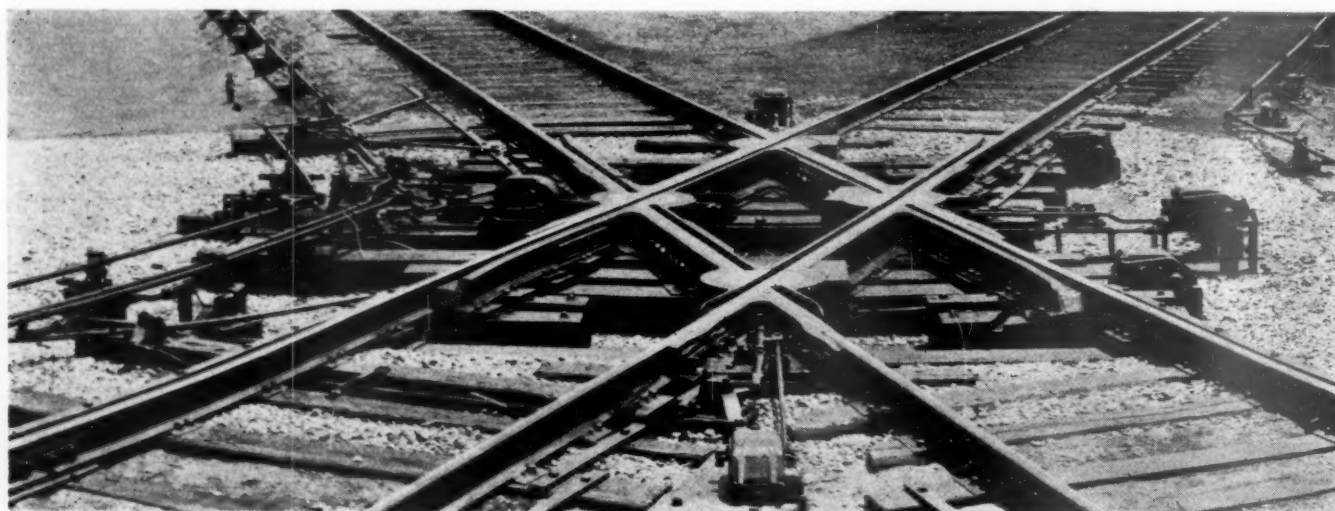
If a defect occurs in one or more of the turntables, an emergency turntable having grooves to coincide with



Showing Details of the Lock and Control Assembly at a Turntable

both sets of flangeways may be inserted in the well. Provision is made to heat the turntables during cold weather to prevent their freezing.

THE ITALIAN CONFEDERATION OF COMMERCE has presented a request to the Ministry of Communications for investigation as to the possibility of reducing rates on the State Railways for imported and exported goods, according to Department of Commerce reports. The proposal points out the disadvantage, due to the configuration of the country, under which Italian importers and exporters labor in comparison with those of other European countries. It is claimed that the average rail haul for imported and exported merchandise is 205 kilometers (127 miles), while in Germany it is 142 kilometers, in Spain 142 kilometers, in France 126 kilometers and in Yugoslavia 113 kilometers. The Confederation expresses its realization that the Railway Administration can not make rates which will entirely wipe out the disadvantages now existing, but it asks that some concessions be made.



A View of the Installation at South Gate

Safety Contest Methods*

Analysis of methods now in use, and suggestions for conduct of contests

AS a preliminary to proper consideration of this subject, a questionnaire was sent to practically all Class I railroads reporting accident statistics to the Interstate Commerce Commission, requesting information as to policy and practice. Replies were received from 101 roads. The following is a brief resumé of the replies:

Twenty-three roads do not tabulate the casualties occurring among employees and others for purposes of comparison with past performance or stimulation of preventive effort. However, the three largest of this group signified intention to do so at once.

Forty-eight roads do not employ "contest" methods of any kind, although 25 of them circulate their accident statistics to stimulate preventive efforts of supervisors and employees. Of these 48 roads, two are large systems, 15 medium size roads, 31 comparatively small.

One large road which formerly conducted a safety competition between groups discontinued the contest, stating as a reason that its preventive work did not seem to be stimulated by the contest sufficiently to justify it. Four other roads state they do not believe contest methods are effective, and for that reason have refrained from using them.

Some 53 roads, including a decided majority of the large and intermediate size, employ contests of various kinds. Of these, 47 use some basic measure of exposure as an equalizing factor against which an accident ratio is calculated. Two measure results otherwise, as shown:

- 40 Use man-hours worked.
- 4 Use man-hours for non-train casualties.
- Locomotive miles for train and train service.
- 3 Use number of men employed.
- 1 Uses per cent reduction under previous period.
- 1 Uses least total time lost from work.

- 49
- 4 Use simply lowest number of accidents, groups of employees contesting being approximately of same general size.

- 53 Total employing contest methods.

Of the 47 using some basic measure of exposure, 27 use figures certified by their accounting departments, and 22 use figures arrived at or estimated by supervising officers, but not checked for accuracy.

- 44 Apply I. C. C. rules as to counting casualties.
- 7 Include passengers and persons carried, in contests.
- 42 Do not count passengers and persons carried, in contests.
- 11 Use a differential weighting as between fatal, other reportable, and lost time casualties.

Of all roads replying to questionnaire, whether using contests or not, 57 require certificate from a surgeon that man can be put to work. Fourteen do not ask for doctor's certificate, 30 did not state their practice.

Prizes awarded are of various kinds, usually banners, plaques, cups or lapel buttons, two roads giving money bonus to foreman and men making best record.

General Comment

There has been definite opposition in some quarters against putting railroad safety work on a competitive

basis, particularly as between the various individual roads. Broadly speaking, the fundamental objection was that men obviously do not refrain from being maimed merely to improve a score or tally, and that therefore the result of instituting a contest would be simply concerted effort to avoid reporting and tabulating injuries that did occur. Those holding these views have been frankly skeptical or incredulous of any low casualty records, achieved where contest methods were employed. Gradually, however, this attitude has become less marked, in view of the increasing evidence of the validity of results attained.

Perhaps there has been a misconception of the real purpose and legitimate objectives of contests.

The primary purpose of a safety contest is to stimulate interest in and create enthusiasm for the prevention of accidents and casualties to persons and to suitably recognize the success of efforts directed to that end.

The primary objective in promoting competition between groups is to more quickly and thoroughly train officers, supervisors and employees to develop and use the safest practices, and to insist upon high standards in tools and equipment.

A secondary but very important objective is to develop co-operation and team work between individuals, groups and departments in their efforts toward a common purpose, thus improving general morale.

Two valid criticisms may be offered to the use of contests, although justified in but few cases: (1) Unless carefully and constantly supervised, a contest may deteriorate into mere efforts to prevent casualties from being entered against the record of the competing group or unit; (2) indifference of management or failure of higher officers to take active interest and give full support may result in completely stultifying the interest of foremen and men, and the contest fails to show any gain.

In either case it is almost inevitable that a large portion of the personnel will eventually lose faith in the sincerity of purpose behind the contest, will regard it as a sham or a fraud, and develop a justifiable resentment. Contests or any other form of safety work will only receive loyal support and active co-operation of the men over a long period, if directed with absolute sincerity of purpose and guided by high standards of ethics.

It is true also that very effective safety work may be done on a railroad without the benefit of contest methods, if the management insistently requires supervisors and foremen to employ safe methods and to teach their men a high regard for personal safety.

Experience on a majority of roads, however, seems to justify their belief that it is most satisfactory to reinforce aggressive supervision with the contest plan, for no matter how definitely men understand that they must get results in preventing accidents, they take a very human pride in having their accomplishments officially recognized and publicly acclaimed.

Basis for Equalizing Contesting Groups

Such a preponderant majority of roads use the ratio of casualties to the number of million man-hours worked, there seems to be scant ground for argument favoring

* Report of the committee on safety contest methods of the Steam Railroad Section, National Safety Council, presented at Pittsburgh, Pa., on September 30, by George H. Warfel, assistant to general manager, Union Pacific, committee chairman.

other bases. Although admittedly imperfect as an equalizer, it is more reliable than locomotive miles, number of employees, or any other measure of exposure readily available. While assuredly a period of hours in one occupation may involve much milder exposure to hazard than a similar period in another occupation, this apparent inequality may be almost completely rectified by arranging contestants into groups of similar exposure, and instituting contests between these groups.

It is regrettable that a comparatively few railroads do employ other than the million man-hour base, as by so doing their periodical contest records are rendered incomparable with results on most other roads.

Kind of Accident Counted

It is common practice of most roads to count in their contests only injuries occurring to employees on duty reportable to the I. C. C., each one constituting a debit against the record. A few include injuries to passengers, and to persons carried under contract, such as mail, express and Pullman employees, stock caretakers, etc. Argument for including these latter is that any injury to such persons presumably reflects failure of the organization to protect those for whose safety it is properly responsible.

The number of I. C. C. reportable injuries is, however, only a *relative* index of the number of *failures* to prevent accidents. As a matter of fact, many hazards and even serious accidents, fortunately do not result in harm to persons, or inflict merely minor hurts. A minor injury may therefore indicate a safety failure as truly as a reportable or fatal injury. It would seem proper thus to count, in a prevention contest, every little hurt, no matter how trivial. But this is impracticable for the same reason that we do not count *hazards* where no injury results; the men will simply not reveal the occurrence, knowing it will be charged against their record. They would often go without medical or first aid treatment in order to keep the record clear. It is only practicable therefore to count minor casualties resulting in loss of time beyond shift, in order not to penalize for securing medical and first aid treatment.

But there is a widespread and well grounded feeling that, after all, the gravity of an accident or hazard should be measured to *some* extent by the severity of its effect on the human being, and men regard it as unfair to charge their group record as heavily for a mashed finger nail as for a broken arm or leg. This raises the question of propriety of weighting for severity of injury.

Weighting for Severity

The frequency of accidents per unit measure of exposure is, of course, the most trustworthy index of results. In fact many feel that it is the only real and practical measure.

There is some question whether severity weighting is justified in a safety contest. The fault, carelessness or failure which results in death is often no more heedless or negligent than the one which results in a mere bruise. But the humanitarian points out that safety work is designed to prevent men from being maimed and killed, and that its success or failure is rightfully measured by the degree of severity of injuries which continue to occur.

It seems expedient therefore to consider a differential which will recognize in some measure the *degree of severity*, but still not inflict penalty out of all proportion to degree of hazard involved or preventive effort possible, nor overshadow the relatively more important factor of an *accident frequency*. If two competing divisions average 100 reportable injuries a year, 5 to 10 of

them fatal, a weighting of 1 point for a lost time, 10 points for a "reportable" and 50 points for a fatal injury may not be unreasonable. But if two sub-divisions only run 3 to 5 reportable injuries each, that weighting might result in a single fatality completely overwhelming one contestant, if the other had none, though the *former* had but that one casualty.

While a weighting scale of 1 debit for a lost time, 5 for a "reportable" and 15 for a fatal injury will prove fairly equitable for roads and groups having a casualty rate of 5 or more per MMH, a corresponding weighting of 1-3-6 is preferable where the frequency is less than 5 per MMH, and this scale would impose no disadvantage on the roads with the higher frequency. It is therefore urged for the sake of uniformity of practice.

It is desirable, however, to include in every published or generally circulated contest statement of a road, the unweighted total casualty rate of the road for the period standing on the national basis.

Grouping of Contestants

Many safety contests have fallen short of the results possible, and a few have failed utterly, because of inequalities between individual groups competing against each other. There may be gross inequality as to size of group, or degree of exposure.

Generally speaking, complete operating divisions of a road are on equal terms provided there is not too tremendous a difference in traffic density. But when contests are instituted between smaller sub-divisions, departmental groups, shops, yards, freight terminals, roadmasters, district mechanical foremen, etc., much care is needed. This becomes increasingly evident as injuries become fewer. When injuries are occurring at a rate of 10 or 15 per MMH the supervisors and men do not see the handicap to a shop of 300 men when competing against one of 50 men. But when the rate drops to 5 or to 3 per MMH, they see that the smaller group will *always* win in any period when it goes "clear" if the larger group has *even one* injury. Other conditions being equal, the odds on going "clear" for a year are 6 to 1 in favor of the 50 man shop! There is less apparent inequality so long as the small shop keeps having some accidents, but when safety gets to a point where the smaller contestants begin going through the contest period "clear," their advantage is inversely proportionate to their total man-hours.

Again generally speaking, employee groups in similar general occupations should be placed in competition with each other, but not pitted against groups similar in size but different in class of service.

Enthusiasm and interest are bound to wane when there is any evidence of serious inequality of opportunity to win. This is also evident when a point is reached where a majority of contesting groups go "clear" and only one or two have any accidents charged against them. Thus on one road with six small yards competing in a contest, all went clear and there was considerable disappointment that but one prize was awarded, the yard with most man-hours receiving it. Obviously there was nothing more to be gained from continuing such an uninteresting contest.

The Fundamental Requirement

It would be desirable to measure contest results in *positive* terms by tabulating a list of the accidents and injuries actually prevented, if such a tabulation were possible and practicable. Obviously, however, that cannot be done, and we are forced to keep score by counting the failures rather than the successes, and measure contest results in *negative* terms of accidents or injuries which continue to occur.

This gives rise to the most serious drawback encountered in conducting contests, the one which has drawn the most warranted criticism; namely, a tendency to avoid reporting an accident or to minimize its severity, in an effort to escape tabulation of it against the record of the contestant group.

Unless such a tendency is rigorously curbed, and the performance kept under impartial surveillance to assure complete reporting, the contest record manifestly will not reflect the actual effectiveness of the safety work of the competing group, department, or railroad.

The safety contest simply employs the age-old expedient of making an interesting and exciting game out of a most serious and difficult undertaking. It is a game which develops resourcefulness, co-operation, skill and efficiency. Best of all, if properly conducted it develops sportsmanship, fair play and a code of ethics which is directly reflected in the morale of the entire railroad personnel. But if improperly conducted and inadequately refereed, it may, like any other game, degenerate into a mere cheating contest.

The tabulation by government agencies of accidents and injuries occurring on railroads was secured largely through the influence of labor organizations for the purpose of establishing accurate statistics on the hazards of their occupations which could be used as a basis for remedial measures. These statistics have proven immensely valuable, not only to the workers but to the managements as well. They are the very foundation of the splendid safety work in which the railroads have led all the industries of the country. So long as the casualty statistics of the I. C. C. as rendered by the individual railroads reflect with accurate fidelity the actual situation on those roads, our safety contests will continue to receive, as they do now, the whole-hearted and loyal support of the great majority of the men who are the chief beneficiaries. But if ever, through over zealousness or incompetent reporting, the accuracy of these casualty figures is impaired, we may expect to lose the esteem and support of those vitally interested men, and of their labor organizations, and we would *deserve* to lose it. Next to the prevention of accidents, the most important service any safety officer can render to his railroad is to see that every accident is correctly reported as to cause, extent of property damage, and severity of personal injury. He should be scrupulous to eliminate such minor cases as are rightfully excluded by fair and honest application of the rules, but be equally zealous to see that *every one of them contemplated by the I. C. C. rules is impartially recorded*. That is a *fundamental requirement* in any safety contest, local or national.

THE ST. LOUIS-SAN FRANCISCO has inaugurated a weekly 30-minute radio broadcast over station WDAF at Kansas City, Mo., which will be continued throughout the winter season in the interest of its passenger service to and from Florida.

AT THE SUGGESTION OF MR. GASTON LEVERVE, the French railway expert who is acting as advisor to the Rumanian State Railways, the following important improvements are to be considered in the near future, according to recent Commerce Department reports: (1) Electrification of the Campina-Brasov line; (2) construction of a direct line between Pitesti and Ramnicul-Valcea; (3) the use of motor trains on lines with small passenger traffic, and (4) the use of automatic brakes on freight trains. Due, however, to the constant deficit of the Rumanian Railways, which this year amount to some 2,000,000,000 lei (about \$12,000,000), the effecting of the above improvements presents a difficult financial problem.

Labor Asks For General Conference on Railways

TWO groups of railway labor—the train service brotherhoods and six shop crafts affiliated with the American Federation of labor—have completed meetings within the past week that were called for the consideration of unemployment relief through shorter daily, weekly or monthly working periods.

The 800 representatives of the "big four brotherhoods" and the switchmen adjourned at Chicago on November 22, after agreeing to inaugurate a joint program for the establishment of a six-hour day for their membership on the railroads of the United States and Canada. The first step in this program was indicated by a statement issued by the leaders of the group which said in part that a sub-committee of each of the five organizations, with the chief executives, had been appointed "to arrange a general conference of interests involved for the purpose of discussing and, if possible, agreeing upon measures of relief for the employees and upon a comprehensive program looking to the protection of the railroad industry as a whole. The chief executives have been authorized to take immediate steps to arrange for the proposed conference and will meet at Cleveland on December 4 for this purpose." Seven men from each of the five unions were appointed to make up the committee of 35 that will meet at Cleveland.

The program drafted by the committee of 25 general chairmen at Chicago and submitted to the general meeting there contemplates the retention of the present daily wage rates which are based upon the eight-hour day in connection with the inauguration of a six-hour day. The question of the limitation of earnings for train and engine service employees through the adoption of a 26-day month was not disposed of at the Chicago meeting and it was indicated that the Cleveland meeting would attempt to reach an agreement on that matter.

With the five brotherhoods in accord on a definite program of unemployment relief, following the proposed Cleveland meeting it is planned to arrange a further conference which would be attended not only by the brotherhood chairmen, but by railroad officers and stockholders and federal officials. This conference would discuss the unemployment problem as it involves all forms of transportation, legislation to produce more adequate earnings for the railroads and other similar matters. In general the failure of the Chicago conference to take any more definite action on the matter of reduced hours and fewer days per month was attributed by the brotherhood officers to the difficulty of transacting business with such a large group.

Representatives of the International Association of Machinists, the Brotherhood of Railway Carmen, the Brotherhood of Blacksmiths Drop Forgers and Helpers, the Brotherhood of Boilermakers, Iron Shipbuilders and Helpers and the Brotherhood of Electrical Workers and the Sheet Metal Workers International Alliance adjourned a conference at Chicago on November 24, after announcing their intention of demanding a five-day week with six days pay for their railroad members. This group of shop crafts officers included B. M. Jewell, president of the executive committee of the railway department of the American Federation of Labor, and J. M. Burns, its secretary.

Mr. Jewell, who acted as spokesman for the group,

stated that the five-day week proposal is in keeping with an increased output per man hour and in some degree is intended to stabilize the unemployment that is partially attributable to this increased productivity. The conference also adopted a statement that "all characters of transportation service should be operated through and by one group of corporations regulated by the Interstate Commerce Commission just as railroads now are; and all federal and state laws should apply alike to all forms of transportation service."

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended November 15 amounted to 829,251 cars, a decrease of 153,675 cars as compared with the corresponding week of last year and of 226,869 cars as compared with 1928. Loading of grain and grain products showed an increase of 1,155 cars as compared with last year but a decrease of 15,774 cars as compared with 1928. All other commodity classifications and all districts reported decreases as compared with both years. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, November 15, 1930			
Districts	1930	1929	1928
Eastern	183,654	217,101	233,243
Allegheny	164,702	204,865	219,369
Pocahontas	55,644	60,740	63,446
Southern	120,414	136,281	156,812
Northwestern	100,085	133,246	139,266
Central Western	134,762	152,033	156,147
Southwestern	69,990	78,660	87,837
Total Western Districts	304,837	363,939	383,250
Total All Roads	829,251	982,926	1,056,120
Commodities			
Grain and Grain Products	37,065	35,910	52,839
Live Stock	29,663	33,441	35,505
Coal	166,945	181,533	198,887
Coke	8,226	11,550	10,794
Forest Products	33,067	53,632	64,448
Ore	14,572	33,297	37,267
Merchandise L.C.L.	231,261	259,543	260,398
Miscellaneous	308,452	374,020	395,982
November 15	829,251	982,926	1,056,120
November 8	881,401	1,048,968	1,054,353
November 1	934,640	1,072,234	1,103,942
October 25	959,335	1,134,360	1,162,974
October 18	931,085	1,185,564	1,163,135
Cumulative total, 46 weeks	41,621,726	47,703,565	46,143,059

The freight car surplus in the period ended November 8 averaged 428,293 cars, an increase of 25,656 cars as compared with the preceding week. This included 238,072 box cars, 139,898 coal cars, 24,157 stock cars and 6,710 refrigerator cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended November 15 totaled 58,136 cars, a decrease from the previous week of 6,745 cars and a decrease from the same week last year of 4,689 cars.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
November 15, 1930	58,136	30,954
November 8, 1930	64,881	30,921
November 1, 1930	67,124	32,795
November 16, 1929	62,825	37,130
Cumulative Totals for Canada		
November 15, 1930	2,841,786	1,534,337
November 16, 1929	3,184,865	1,890,837
November 17, 1928	3,272,693	1,816,117

Looking Backward

Fifty Years Ago

The Missouri, Kansas & Texas, comprising about 826 miles of line, was leased to the Missouri Pacific on December 1, and Jay Gould, president of the Missouri Pacific, has assumed the presidency of the leased road. The line will be operated as the Kansas and Texas division of the Missouri Pacific.—*Railway Age*, December 2, 1880.

The St. Louis & Southeastern [now part of the Louisville & Nashville] was sold at Springfield, Ill., on November 16 under a decree of foreclosure granted by the United States Circuit Court. The sale included the line from East St. Louis, Ill., to Evansville, Ind., with the O'Fallon and Shawneetown branches, 208 miles in all. The property was bought for \$3,200,000 for the bondholders who will organize a new company in which the Louisville & Nashville will have a controlling interest.—*Railroad Gazette*, November 26, 1880.

The Southwestern Railway Association continues to illustrate the benefits of co-operation in maintaining rates. Its commissioner estimates that the earnings of the roads in the association on Missouri river business alone have been greater during the past year by \$4,000,000 than they would have been at the rates prevailing during the five months war among the same roads last year, and that counting the local business upon which rates were protected by the maintenance of through rates, the gain has been \$10,000,000. Besides this the roads not in the association but doing business with it from territory west of the Missouri river, have, it is estimated, saved \$2,000,000.—*Railway Age*, December 2, 1880.

Twenty-Five Years Ago

J. J. Bernet, superintendent of the Eastern division of the Lake Shore & Michigan Southern [now part of the New York Central], has been appointed assistant general superintendent of that road, the Indiana, Illinois & Iowa, the Lake Erie, Alliance & Wheeling and the Dunkirk, Allegheny Valley & Pittsburgh [all now parts of the New York Central], with headquarters at Cleveland, Ohio.—*Railway Age*, December 1, 1905.

The Chicago, Milwaukee & St. Paul will be the first company to own a continuous railway from Chicago to Puget Sound. Its intention, long entertained, is now publicly announced and work will soon be in progress along 1,500 miles of new road between the Missouri river and the Pacific coast. This company already owns a line from Chicago to Evarts, S. D., 805 miles, or about one-third of the distance to the coast. From the Missouri river it will push westward across the remaining half of South Dakota and over the entire width of Montana and Washington to some point near Seattle and Tacoma, from whence it will fork to each of these termini.—*Railway Age*, December 2, 1905.

Ten Years Ago

H. L. Worman, assistant superintendent of motive power of the St. Louis-San Francisco, has been appointed superintendent of motive power, with headquarters at Springfield, Mo.—*Railway Age*, November 26, 1920.

Passenger, sleeping car and parlor car fares, baggage charges and the rates on milk and cream applicable to intrastate transportation in New York, except local commutation fares, are ordered increased in amounts corresponding to the increases recently allowed by the Interstate Commerce Commission for interstate traffic, in the commission's decision in the New York passenger fare case, announced on November 17. The commission finds that the lower rates required by state authority are prejudicial to interstate passengers, preferential to intrastate passengers and unjustly discriminating against interstate commerce.—*Railway Age*, November 26, 1920.

Communications and Books

More on Concrete Roadbeds

TO THE EDITOR:

DETROIT, MICH.

Mr. Reece, in his interesting letter published in your issue of September 20, reaches a final conclusion to which no exception can be taken. This conclusion is that until a permanent roadbed is developed that is more economical than the present type of track, the latter should be so improved as to secure from it the maximum economy. This is the ambition of every maintenance man but one not always achieved. In an effort to determine the most economical weight of rail for his railroad, he has made a very thorough study of an exceedingly complex subject.

Perhaps he is right also in concluding that a permanent roadbed costing \$35,000 per mile could not be installed with economy on the Kansas City Southern, where the average traffic is 6,250,000 gross tons per mile per year. The economy under that traffic might not be great enough to justify a general installation, although it would probably prove to be so in certain territory where traffic is above the average in density. His estimate of the probable saving indicates that his road is not far from the economic border line.

His estimate should be corrected as to one item, that of track maintenance labor. A saving of \$204 per year is not enough. Mr. Reece obtains this figure from records kept by the Pere Marquette for one year on two sections of track, each one-quarter mile long; one being on the first installation of concrete roadbed and the other on ordinary track. One year's record on such short sections has little value for comparison, as the costs are too easily distorted by unusual or periodic items. Only a small part of the costs incurred on the concrete roadbed were items of normal maintenance, and the total amounts to only \$173 per mile per year. On the other hand, the expenditure on the one-quarter mile of ordinary track of \$94.40 for maintenance labor, or \$377.60 per mile, is much less than normal.

According to Table X of Mr. Reece's report, the cost per mile of track maintenance labor on the Kansas City Southern in 1927 was about \$750. It would seem that a reduction of 80 per cent, or about \$600, would be a fair estimate of the saving that would result from a permanent roadbed. Substituting this amount for the \$204 used by Mr. Reece brings the total saving per year to \$2,634, leaving \$884 above interest on investment. This annual saving, compounded at 5 per cent interest, would amount to \$35,000 in 23 years. Surely this is the proper basis of computation, as it could not be assumed that such savings would lie idle and uninvested. Even Mr. Reece's estimated net saving of \$488 per year, compounded at 5 per cent, would amount to \$35,000 in 31 years, which should be used instead of the 72 years he mentions.

Further, the gross cost of a project is not a proper basis for computing interest charges. They should be based on the increase in the investment account. When the old track is replaced, the investment account is credited with its cost. This cost, less salvage, is charged to operating expenses and properly so, as it is the cost of service already rendered, which would have to be paid for at some time in connection with replacement. This makes the charge to investment considerably less than the total cost, the amount of such difference depending, of course, on the character of the track retired.

On a road built for heavy traffic the credit for retirement, not including rail and joint fastenings, would amount to about \$12,000 per mile, while a further credit of \$3,000 per mile would result from the substitution of 90-lb. for 130-lb. rail; making a total credit of \$15,000 and producing a net charge to investment of \$20,000 per mile. A saving of \$2,634 per mile per year would, therefore, be 13 per cent on the net capital charge, or \$1,634 in excess of 5 per cent interest. This excess would amount to \$20,000 in a little over 12 years without interest and in a little over 9 years if compounded annually at 5 per cent.

I am not familiar with the distribution of traffic on the

Kansas City Southern, but most railroads have certain sections where the traffic is much heavier than the average for the system, frequently several times as heavy. The saving per mile on such sections would be correspondingly greater. It would not increase directly in proportion to traffic, but pretty much so as the principal items, except ties. If the Kansas City Southern has a section where traffic is twice as heavy as the average, the saving per year, on the basis of Mr. Reece's estimate, would be around \$4,000 per mile, or 20 per cent on the increase in investment or \$3,000 per mile after deducting 5 per cent interest.

As to obsolescence due to possible changes of line and grade, it would be unwise to install any expensive improvement where such changes are probable, and equally unwise not to make profitable improvements on account of a rather remote contingency. As to sharp curves, a reduction of speed of fast trains at such points will always be necessary, as it is today. In mountainous country, where sharp curves abound, their elimination is out of the question. In less difficult country they should not, and in general do not, occur so frequently that a moderate reduction of speed over them makes any difference of consequence in the total time.

In regard to gradients, it would seem that the tendency toward higher speed will lessen the necessity for reducing grades, rather than increase it. Faster trains mean lighter trains or heavier motive power. They also make it possible to operate by momentum over numerous grades that would stall the slow drag. On the average railroad of today, the mileage that will be changed as to either line or grade is relatively small. Such places are well known, and should be omitted from any general program for installing permanent and expensive improvements.

As to the permanency of a roadbed of reinforced concrete, no valid reason has ever been advanced for setting any limit to its life, if properly designed and constructed. Good concrete is a very enduring material. Its strength increases with age. If it is not good, it is worthless. It can be made good, better or best, according to principles and practices that are now well established. It ought to last a hundred years or more, provided the stresses for which it is designed are not exceeded.

Durability is a matter of good concrete and proper design; while economy hinges mainly on density of traffic.

PAUL CHIPMAN,
Office Engineer, Pere Marquette.

Something for the West and Mid-Continent to Think About

SAN FRANCISCO, CAL.

TO THE EDITOR:

I have taken a great deal of pleasure in noting the attitude which you are taking in articles and also in editorials, that now is the time for the railroads to gird on their armor and do some fighting. The "Unite and Fight" article by the Honorable Thomas F. Woodlock, also your editorial "A Railroad Convention Needed" again brings to my mind what would appear to me to be an excellent argument that could be made in favor of the railroads in their transcontinental haul in competition with water carriers.

Take a 10,000 ton ship; cargo would make five trains of 2,000 tons each or 4,000 Ms which would be very fair average should this tonnage be hauled by the railroads across the continent from east to west. For each freight division it would be necessary to have a locomotive, an engineman and fireman, conductor and never less than two brakemen and frequently more according to length of train over each freight division. There are also frequent inspection points where car men and engine roundhouse men are employed, and there would be at least 20 changing points.

With train and engine crews alone that would provide occupation for the one trip for 100 men. The men at the inspection points would be not less than that number. The complement of officers and crew for the average freight steamer, no passengers

carried, would be about 65 men. These men receive their pay at, no doubt, home terminal, which would be on the Atlantic seaboard, and they are shipped there as well and very few changes are made in crews when they reach the Pacific Coast.

All of the interior towns the railroads pass through would be benefited by increase in freight tonnage and distribution of circulating medium. It certainly would create a greater demand for food, etc., than would be created by the 65 men who are entirely out of touch and are maintained by steamship companies on their trip between port and port.

This is offered as a suggestion, not entirely personal, but you might say a consensus of opinion of a number of us.

Yours very truly,

E. R. ANTHONY.

Train Speeds

ST. LOUIS, MO.

TO THE EDITOR:

The enclosed article from "La Croix" (Paris) for January 25, 1930, is of considerable interest. While I have not attempted to make a thorough check of the American data, it is evident that the author has made a sincere attempt at accurate analysis; he has done more than glance over the Railway Guide. He has endeavored to find out something about locomotive runs, the weight of trains, and so on; he knows that the Camden-Atlantic City time is slower than it used to be, and that the "Century" makes an operating stop at Elkhart, Indiana. Strangely enough, most American writers on the subject fail to concern themselves with such details. Most important of all, this French writer, in making his comparisons, has not limited himself to the terminal-to-terminal runs of our best trains but has used portions thereof. In the United States the fastest runs of over 100 miles are usually made by long-distance trains which with few exceptions average less than 50 miles an hour over the whole trip, but which between various intermediate points are scheduled at a much higher rate. On the Frenchman's basis, therefore, our showing is very creditable.

Below is a tabulation which makes no pretense at being complete, but illustrates the "La Croix" writer's point.

The Southwestern Limited and the Knickerbocker, mentioned above, are undoubtedly the fastest trains in the world for the distance. They average 50.2 miles per hour over their 1156.4-mile route. The Southwestern, moreover, averages 52.6 for the 720 miles from St. Louis to Buffalo.

The Canadian National's "Inter-City Limited," companion to the "International," runs from Brockville to Montreal, 125.6 miles, in 125 minutes, averaging 60 miles an hour."

A. L. BOSTWICK.

[The writer of the letter above attached a clipping from "La Croix" (Paris) of January 25, 1930. The article thus cited was one comparing train speeds on French, British and American railways with a brief closing reference to recent developments along the same line in Germany. This French writer listed two trains on the Eastern of France as being the fastest in that country. Train No. 37 from Paris to Rheims, operating over 96.85 miles at a rate of 55.9 miles per hour and Train No. 31 from Troyes to Belfort covering 171.7 miles at a rate of 55.6 miles an hour. He also listed for Great Britain what is called the fastest train in the world, i.e., the Great Western train, traveling between

Swindon and London, 77 miles, at 66.2 miles an hour. But along with the foregoing listings the "La Croix" author recognized the fact that long-distance trains often attain record speeds over sections of their runs whereas their terminal-to-terminal speeds may be in no way spectacular. It was this latter feature which attracted the attention of our correspondent and prompted his accompanying analysis of American train speeds—EDITOR.]

Holding Trains for Tonnage Would Stimulate Purchasing

SAVANNAH, GA.

TO THE EDITOR:

The predicament of the railroads is such that drastic measures are becoming necessary. A lot has been said and written with respect to the lack of co-operative economic policies practiced by the railroads and much of this is true. It therefore follows that if a co-operative policy is adopted, nothing but good will result.

There is no doubt but that the railroads, individually, have cut to the very bone in their efforts to keep on the right side of the ledger, and this without lowering the standard of efficient service rendered to the public. At least one of the ills persistently affecting the railroads is the result of this very fact of highly efficient service, and while such service is surely desirable, there are limits beyond which even the railroads should not be expected to go.

It costs something extra to render service that is more efficient than ordinary service. Times are hard and have been for some time. Goods do not move across the counter as fast as they did in normal times. The result is that shipments are smaller and while this fact calls for a faster movement and delivery, the entire burden should not be borne by the railroads. Should railroads run trains whether or not they have tonnage sufficient to justify the expense? They should not, at least during times that are as hard as these and here is where the absolute necessity for co-operation comes in.

If all the roads agreed (and we mean, faithfully) not to run through freight trains until the tonnage justified, regardless of making established schedules, they could certainly save money. Of course some might suffer a little temporarily, but in the end all would benefit since merchants and manufacturers would buy larger stocks and all that is needed in the various lines of industrial endeavor is an impetus to start the works going. It reminds one of the watch that won't run until the balance wheel is given a turn.

OBSERVER.

Disapproves Caboose Pooling

McCOOK, NEB.

TO THE EDITOR:

Your editorial regarding the pooling of way cars has brought forth considerable discussion among trainmen. It goes without saying that none of the opinions expressed were favorable. Your comments that it would save time in the switching of through trains are correct but there are several other factors to be taken into consideration.

The number of trains that go through terminals without being broken up is small in comparison with the number run.

Railroad	Train	From	To		Time		Speed Miles per Hr.
					Hrs.	Min.	
Pennsylvania	Steel City Express	Valparaiso	Fort Wayne	104.4	1	45	59.6
C. C. C. & St. L.	Ohio State Ltd.	Columbus	Linndale	132.0	2	17	57.8
C. C. C. & St. L.	Southwestern Ltd.	Mattoon	Indianapolis	128.2	2	13	57.8
N. Y. Central	Southwestern Ltd.	E. Cleveland	Buffalo (1)	179. (1)	3	6 (1)	57.7
Michigan Cent.	Train 15	St. Thomas	Windsor	109.6	1	54	57.7
N. Y. Cent.	Twentieth Century	Englewood	Toledo	227.0	3	59 (2)	57.0
Pennsylvania	Liberty Ltd.	Gary	Crestline	254.5	4	29	56.8
C. C. C. & St. L.	Knickerbocker	Anderson	Linndale	241.4	4	23	55.1
New York Cent.	Train X 19	Toledo	Elkhart	133.0	2	25	55.0
Pennsylvania	Rainbow	Newark	Harrisburg	184.0	3	22	54.7
C. C. C. & St. L.	Southwestern Ltd.	Muncie	Linndale	223.5	4	7	54.3
N. Y. Central	Empire State Express	Buffalo	Albany	293.7	5	25	54.2
Pennsylvania	Congressional Ltd.	Baltimore	Manhattan Transfer	175.5	3	15	54.0
B. & O.	Ft. Pitt	Gary	Garrett	116.9	2	11	53.5
N. Y., N. H. & H.	Yankee Clipper	Providence	New Haven	113.0	2	9	52.6

(1) Buffalo time not shown on time card; obtained it from trainman. Distance is figured to new terminal. Time includes stop for change of power at end of Cleveland terminal zone.

(2) Time card shows 4 hours 2 minutes but this allows for 3 minutes for change of power. (From personal observation).

The trains that have come to be known as main-trackers invariably have one or more cars to come off at the terminal and, at the present time these are placed next to the way car which, of course, makes no extra switching for the way car.

Under present conditions trainmen work regardless of the weather. Should the way car be pooled, it is obvious that it would be impossible for trainmen to carry along clothing for all weather conditions. I am afraid the work would be slowed down far out of proportion to the small time gained. Trainmen certainly like to change clothes and look respectable when through work and it would be impossible to carry along good clothes in addition to one's heavy working clothes, to say nothing of rainy weather equipment.

At the present time, trainmen may be found in the way cars, and, if they were scattered over the town, it would involve an extra expense for callers, or the trainmen would probably do as the engine crews have done, ask for bunk houses. Then there is the extra expense of having the way cars kept clean. Under present arrangements, the trainman keeps his own car clean.

I am sure the feeling of content that prevails with crews having regular cars is worth something to the company. I don't know of any one thing that would go further toward disrupting the morale among trainmen than the pooling of way cars.

L. F. JAGGER,

Conductor, Chicago, Burlington & Quincy.

New Books

Oil Conservation and Fuel Oil Supply, published by the National Industrial Conference Board, Inc., 247 Park avenue, New York. 166 pages, 6 in. by 9 in. Illustrated with diagrams and charts. Price \$2.50.

In order to supply comprehensive information concerning the basic facts underlying the problem of oil conservation and fuel oil supply, the National Industrial Conference Board has undertaken a series of studies to show the world consumption and production of the various forms of energy. The study presented in "Oil Conservation and Fuel Oil Supply" gives a detailed analysis of the factors that determine consumption and production of fuel oil. The various uses of fuel oil, the combination of these uses with one another, and the extent to which other sources of energy, particularly coal and natural gas, compete with the present and probable future supply of fuel oil are considered, especial reference being made to the effects of a possible decline in supply under a conservation program. There are four parts and an appendix to the book, lists of tables and charts, and map inserts showing for 1929 the regional consumption and production of coal, natural gas, fuel oil, gasoline and developed water power.

Who's Who in Railroading, published by the Simmons-Boardman Publishing Company, 30 Church Street, New York City. 579 pages, 8¾ in. by 5½ in. Bound in cloth. Price \$8.50.

This well-known work formerly called the "Biographical Directory of Railway Officials of America" now appears in its ninth edition under the new name and greatly enlarged in scope. The publication of this directory was begun in 1885 with subsequent editions appearing in 1887, 1893, 1896, 1901, 1906, 1913 and 1922. And now comes this 1930 edition, or "Who's Who in Railroading."

The new name, the foreword says: "was suggested as more accurately descriptive of the enlarged scope of the work in its new form. This enlargement is in two directions. First, there have been included biographical sketches of men who, while not actually employed by railroad companies, are nevertheless, railroad men in the broad sense of the term—leaders among the manufacturers of railway equipment and supplies, railway economists, regulatory authorities and others whose work ties them closely to the railway industry. Second, an effort has been made in this edition to supply, not only the significant facts regarding the business career of those included, but also more personal information—their families, their social, religious and political affiliations, etc. This latter information was added with the thought that it would provide more adequate and satisfying biographical portraits than the facts of business career alone."

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Commercial Survey of the Pacific Southwest, by C. R. Niklason. Includes a survey of the historical background [Cabeza de Vaca, 1536, to present], and discussion of physical factors, agriculture and related industries, Forest resources, Mineral industries, Fisheries, Manufacturing, Recreational Resources, Population, Transportation (railways i. e. Santa Fe, Southern Pacific, Western Pacific, Los Angeles & Salt Lake, Pacific Fruit Express; Influence of Panama Canal, Inland water transportation in California, trade with Hawaii, Motor-vehicle transportation, Water-borne foreign commerce, Air transport), Primary trade areas and Market data. Domestic Commerce Series No. 37 of the U. S. Dept. of Commerce. 647 p. Pub by U. S. Govt. Print. Off., Washington, D. C., \$1.85.

Statistical Abstract of the United States 1930, prepared by U. S. Bureau of Foreign and Domestic Commerce. 52d Number. Section 20: Steam and Electric Railways and Express Companies, p. 393-429. Statistics generally for 1929 and earlier years. 876 p. Pub. by U. S. Govt. Print. Off., Washington, D. C., \$1.00.

Periodical Articles

Credit Union Movement in the United States in 1929. The membership tables, p. 3, 4, show that railway employees have a large number of credit unions. Monthly Labor Review, November 1930, p. 1045-1055.

The Education of a Commissioner, by Thomas F. Woodlock. Considers "Argument" and "Conference" at the Interstate Commerce Commission. "But, if he is honest with himself, he will realize that the secret of success in his work lies in the utilization to the full of the limitless stores of knowledge, experience, loyalty and industry that exist in the commission's permanent staff. These are his for the asking; indeed, he does not have to ask,—he has merely to accept * * * " Barron's November 17, 1930, p. 5.

The New Era of "Hook-Ups." This editorial points out that the "Hook-Up Era" began in a small way in early canal and railroad days, gained real progress with railroad extension, has proceeded to other fields, with the "very latest" being in the political field. Commercial & Financial Chronicle, November 22, 1930, p. 3262.

Railroads Versus Motor Truck Lines—A Decision in Louisiana. Editorial comment. "In placing the motor carriers under the absolute control of the State Public Service Commission, the Louisiana Legislature has acted wisely.... They should be subject to the same general regulations as the railroads in the matter of handling freight and passenger service and in maintaining schedules. Such regulations as these would tend to weed out rank competition in this particular field, and would help restore prosperity to the railroads of the country. Help the railroads to become prosperous again, and a long step forward will have been taken to remove the existing trade depression." Commercial & Financial Chronicle, November 15, 1930, p. 3093-3094.

Rates and John Smith, by Fred W. Sargent. A discussion of railroad rates in relation to other factors in our industrial civilization. World's Work, December 1930, p. 33-35, 113.

Reinforced Concrete Bridge at Plougastel, France. "It carries a 26-foot roadway on the upper deck, with a single track railway on the lower deck, and crosses the estuary of the River Elorn, where the tidal range is 26 feet. It consists of three arches * * * These are the largest concrete arches yet undertaken, and their construction involved many novel and ingenious features." Engineering Journal (Canada), November 1930, p. 654-655.

Why Keep Wages Secret? by George F. Johnson. "Why not report to the general public on how much the corporation is contributing to national prosperity through distributing earning power to wage earners? Investors also need to know that." p. 25. Saturday Evening Post, November 15, 1930, p. 25, 132.

Odds and Ends of Railroading

Longest Tangent?

The Trans-Australian Railway runs for an even 300 miles across the sandy wastes of the Nullarbor Plain, without a curve. Until proved otherwise, this may be regarded as the world's longest tangent.

Air-Minded

One can hardly say that the station namers of the Port Angeles Western, out on the Olympic peninsula in Washington, were not air minded. Of the seven stations on this 53-mile line, one is called Aero, and another Flight.

Meet the Major

Ed Burns, fireman of the New York division of the Pennsylvania, claims to be the "rankingest" fireman in the country. Ed is a major, field artillery, organized reserves, U. S. Army, and commands the second battalion, 441st F. A., with headquarters at East Orange, N. J.

Gold Star Mother

Among the Gold Star mothers who made the pilgrimage to France last summer was Mrs. J. F. Armstrong, wife of a section foreman for the Chicago, Rock Island & Pacific at Alva, Okla. Three of her sons served in France, and William remained there, having been killed in action during the Meuse-Argonne offensive.

I. C. Leads in Mayoralty Race

Amplifying on the researches into railway mayors, as conducted by this department, the Illinois Central Magazine, as a result of a system-wide survey, produces 18 employees who are also mayors of their respective cities. The list includes 7 agents, 4 section foremen, 2 clerks, 2 local surgeons, 1 landscape gardener, 1 supervisor and 1 engineman.

A New Kind of Former Railroader

There seems to be no end to the list of the great and the near great who at some time in their careers spent a year or two in railroad service. Charles Hooper, recently proclaimed by the newspaper profession's trade journal, Editor and Publisher, as the champion contributor to the letter columns of newspapers, was in his early days a railroad freight handler.

Prolific Craftsmen

The employees of the North Shop of the St. Louis-San Francisco at Springfield, Mo., have a number of records for safety and efficiency, but their proudest boast, perhaps, is their leadership in the matter of twins. The list is imposing: Richard and Martha Seth, 8 mo., son and daughter of an air brake machinist; Billy and Bobby Barclay, 3 yr., sons of a car carpenter; Jean and Jane Freeman, 13 yr., daughters of a train dispatcher; Nadine and Maxine Watt, 19 yr., daughters of a sheet metal worker.

Notorious Train Robber Dies

Oliver Curtis Perry, notorious train robber, who for 25 years was in solitary confinement in the State Hospital at Dannemora, N. Y., is dead at the age of 64. He was violently insane.

Perry twice robbed the American Express Company's special train on the New York Central between Syracuse and Lyons, N. Y. The first time he got \$5,000 in cash and some jewelry and escaped after jumping from the train.

His second robbery of the same train took place six months later, on February 21, 1891. He was later recognized in the crowd at the station in Lyons, sprucely dressed, gold-rimmed eye-glasses, a satchel slung over his shoulder by a strap. When train hands tried to arrest him, he drew two revolvers covered the men and retreated to an engine that was coupled to a

train. He uncoupled the engine, leaped to the cab and rapidly disappeared down the track. Pursued in another engine, he reversed his lever and passed his pursuers at full speed, exchanging shots as he did so. The robber kept up this game for an hour, then deserted the engine, which he ordered the switchman at pistol point to take back to Lyons. Caught by a posse he was convicted on May 19, 1892, and sentenced to Auburn for 49 years. In December, 1893, he was adjudged insane and transferred to Matteawan.

Sing While You Eat

J. W. Reynolds, supervisor of dining cars of the Seaboard Air Line, is one dining car officer who firmly believes in song as an aid to digestion. Some eight years ago when the American Short Line Railroad Association made a trip on a special train through the Northwest, Mr. Reynolds served in a double capacity on the train, as dining car steward and as song leader. One of those on that trip maintains that the community singing under Mr. Reynolds' leadership was so lusty that even the engineman and fireman could hear it when bowling along at 50 miles per hour. During the World War Mr. Reynolds served for two years as a song leader in various training camps. With him leading, the voices of those at a recent banquet of the Associated Traffic Clubs literally shook the rafters of the Shrine Mosque at Atlanta.

Out of the Railroad and Into the Bank

In the office of Cost Engineer C. J. Bennett, on the twelfth floor of the B. & O. Building, Baltimore, there were many records being filed. The door and the windows were open, and there was a delightful breeze coming through. Suddenly a paper was lifted and before anybody could catch it, out the window it had sailed away, away and away. A few days later Mr. Bennett received an important-looking letter from the Fidelity Building. Inside was a note from a gentleman whose office is on the thirteenth floor of that building. And accompanying the letter was the missing report. It had been carried by the wind into the Fidelity Building and landed on this gentleman's desk. Mr. Bennett's name was at the bottom, and the report, therefore, was returned to him. The Fidelity Building is two blocks away from the B. & O. Building.

Highest Dining Car

Perched along a pathway, in the shadow of a mountain peak a dining car is now serving mountain climbers as it used to serve the traveling public. It is in the Passa di San Giacomo at Pescatore, in the Italian part of Switzerland, and the ladder shown in the illustration is the only means of entrance and exit to this unique restaurant.



The Highest Dining Car

NEWS

September Freight Traffic Below Previous Years

*Net ton-miles show reduction
of 18.1 per cent from
September, 1929*

The volume of freight moved by the Class I railroads in September amounted to 36,219,944,000 net ton-miles, according to reports compiled by the Bureau of Railway Economics. Compared with September, 1929, this was a reduction of 8,002,066,000 net ton-miles, or 18.1 per cent, and it was a reduction of 7,571,395,000 net ton-miles, or 17.3 per cent, under September, 1928.

In the Eastern district, the movement was 20.5 per cent less than that in the same month in 1929; in the Southern district 19.3 per cent, and in the Western 14.6 per cent less.

Total in the first nine months of 1930 amounted to 321,480,411,000 net ton-miles, a reduction of 48,210,240,000 net ton-miles or 13 per cent under that of the corresponding period in 1929 and a reduction of 27,837,372,000 or 8 per cent, under that of the same period in 1928. The Eastern district total for the nine months showed a reduction of 13.3 per cent; the Southern district 13.5 per cent, and the Western 12.5 per cent.

The average speed of freight trains for the first nine months this year was the highest for any corresponding period on record, amounting to an average of 13.7 miles an hour, an increase of 0.6 mile above that for the same period last year. The average of 13.7 miles for September was also the highest for any September on record. The average daily movement per freight car in September was 29.9 miles, compared with 34.2 miles for the same month last year and 33.8 miles in September, 1928.

The average load per car in September this year was 26.8 tons. This was a decrease of 0.3 ton below the average for September, 1929, but an increase of 0.1 ton above that for September, 1928.

Illinois Manufacturers' Association Annual Dinner

Edward W. Beatty, chairman and president of the Canadian Pacific, and Arthur Brisbane, an executive and editorial writer of the Hearst newspapers, will be the principal speakers at the annual dinner of the Illinois Manufacturers' Association which will be held at Chicago on December 9 at the conclusion of the annual meeting of this organization.

Traffic Increases 103 Per Cent Under T. & P. Low Fares

The Texas & Pacific's experiment in meeting automobile and motor coach competition by reducing passenger fares on three daylight trains between Fort Worth, Tex., and Big Spring proved successful during the first 16 days, travel on these three trains having increased 103 per cent.

Low Rates from Chicago to Florida and California

*Popular-priced excursions an-
nounced by carriers serv-
ing winter resorts*

Popular priced excursions to Florida and the Gulf Coast from Chicago will be placed in effect by Chicago roads this winter in order to attract those who can afford only two weeks' vacation. This action by roads operating from Chicago to Florida follows that of those operating from Chicago to California, which previously announced winter excursion rates from Chicago to California points at one fare plus 50 cents for the round trip between December 16 and 22 and again on December 26, with a return limit of January 15.

The excursion fares from Chicago to Florida will be equal to one fare plus a validation fee of 25 cents and have a return limit of 16 days from the date of sale. Dates of sale are December 13, December 27, March 14 and April 4. In addition, the low rates will be applied to travel to Miami, St. Petersburg and Havana on January 12 and 24 and again to travel to Miami on March 27.

B. of L. E. Sued

A suit involving \$1,500,000 was filed in the federal court at Cleveland, Ohio, on November 18, against the Brotherhood of Locomotive Engineers, the Brotherhood Holding Company and officers of the two organizations by Annette Myers and Peter C. Myers of Willmar, Minn., asking for a judgment and an accounting as a result of financial operations of the organizations. It was charged by the plaintiffs that a number of insecure loans were handled by the brotherhood bank during its operation at Cleveland.

Railway Expenditures Are Largest Since 1923

*Nine months total of \$698,821,-
000 is 22 per cent above
1929 outlay*

Capital expenditures of the Class I railroads for new equipment and additions and betterments were the largest in the first nine months of 1930 for any corresponding period since 1923, according to an announcement on November 20 by R. H. Aishton, chairman of the executive committee of the Association of Railway Executives, in connection with the annual fall meeting of the member roads of the association in New York.

Capital expenditures actually made in the first nine months of 1930 totaled \$698,821,000, an increase of \$125,001,000 or approximately 22 per cent above those of the same period in 1929, and an increase of \$198,654,000 or 39.7 per cent above those of the corresponding period in 1928.

The amount expended for capital account in the first three-quarters of 1930 exceeded by \$69,728,000 or 11.1 per cent the capital expenditures made in the corresponding period in 1929. For freight cars, expenditures so far this year have amounted to \$162,356,000, an increase of \$36,270,000 over the same period last year, while for passenger train cars, the railroads have spent \$33,270,000 so far this year, or an increase of \$5,758,000 above the nine months period of 1929. For other equipment, expenditures amounted to \$11,156,000, compared with \$12,404,000 in the same period last year.

Of the \$698,821,000 actually expended for capital account in the nine months period this year, \$272,825,000 was for new equipment, while \$425,996,000 was expended for roadway and structures.

Capital expenditures for locomotives in the first nine months amounted to \$66,043,000, an increase of \$21,356,000 above similar expenditures made in the corresponding period in 1929. For freight cars, expenditures so far this year have amounted to \$162,356,000, an increase of \$36,270,000 over the same period last year, while for passenger train cars, the railroads have spent \$33,270,000 so far this year, or an increase of \$5,758,000 above the nine months period of 1929. For other equipment, expenditures amounted to \$11,156,000, compared with \$12,404,000 in the same period last year.

Among expenditures for improvements of roadway and structures, the largest item was that for station and office buildings and other station facilities, which amounted to \$69,340,000. This was an increase of \$20,539,000 above similar expenditures made in the first nine months of 1929. For additional main track, the railroads spent \$49,139,000, an increase of \$4,870,000 above similar expenditures in the same period one year ago, while for

yards and sidings, \$38,465,000 were expended, which amount was a reduction of \$7,827,000 under the preceding year. For heavier rail, the railroads so far this year have spent \$40,215,000, compared with \$33,995,000 spent in the same period one year ago. Expenditures for additional ballast in the nine months this year have amounted to \$9,755,000 compared with \$11,533,000 in the preceding year.

For shops and engine houses, including machinery and tools, capital expenditures so far this year have amounted to \$24,127,000 compared with \$23,838,000 in the same period in 1929. Capital expenditures for bridges, trestles and culverts for the first three-quarters of 1930 amounted to \$44,384,000. In the same period last year, \$43,253,000 were spent for the same purpose. For signals and interlockers, including telegraph and telephone lines, automatic train control, and other similar improvements, the railroads in the first nine months of the current year spent \$28,998,000, an increase of \$8,766,000 above expenditures for similar items one year ago. For all other improvements \$121,573,000 have been expended so far this year, compared with \$90,918,000 for the same period one year ago.

Capital expenditures actually made in the first nine months of each year beginning in 1924, when reports by quarters were first received, follow:

Date	Equipment	Roadway and structures	Total
1924 ...	\$346,091,000	\$264,813,000	\$610,904,000
1925 ...	255,893,000	279,141,000	535,034,000
1926 ...	271,023,000	358,070,000	629,093,000
1927 ...	204,992,000	365,223,000	570,215,000
1928 ...	165,967,000	334,200,000	500,167,000
1929 ...	210,689,000	363,131,000	573,820,000
1930 ...	272,825,000	425,996,000	698,821,000

Abandoning Louisiana Short Line

Steps have been taken to abandon the Leesville, Slagle & Eastern, extending between Slagle, La., and Leesville, 10 miles. It is expected that the railroad will be completely abandoned during 1931.

Tie Producers Meeting

The National Association of Railroad Tie Producers has selected the West Baden Springs Hotel, West Baden, Ind., as the location for its thirteenth annual convention, which will be held on May 5-7, 1931.

Promotions on I.C.C. Staff

T. M. Ross, principal attorney for the Bureau of Valuation of the Interstate Commerce Commission, has been appointed assistant general solicitor of the bureau, succeeding Oliver E. Sweet, who was recently appointed director of the Bureau of Finance.

"Theatre Train" with a Long Run

The Pennsylvania has placed twilight excursions in effect from November 22 to December 27, from Ft. Wayne, Ind., Plymouth, Warsaw and Valparaiso to Chicago for persons attending the opera, theater and other evening attractions, the round trip fares being \$3 from Ft. Wayne, \$2.75 from Warsaw, \$2.05 from

Texas Employees Oppose Subsidization

Employees of the Texas & Pacific have established an organization to oppose the alleged discrimination which exists in favor of motor coach and truck lines and against the railroads. A memorial prepared for submission to the Texas legislature declares that the taxation of one industry to subsidize its competitor is tyranny, and asks that highway lines be placed on the same basis as the railroads with respect to taxes. It suggests a ton-mile tax for freight handled by trucks and a passenger-mile tax for passengers carried by coaches, and asks that the tax be high enough to offset the benefits received by state construction and maintenance of highways.

Plymouth and \$1.05 from Valparaiso. Trains leave in the afternoon and arrive in Chicago at 5:30 p. m., and leave Chicago at 11:45 p. m. and 1:20 a. m. Fort Wayne is 148 miles from Chicago; the other places are less distant.

Continued Reduction of Grade Crossing Accidents

A continued improvement in the highway grade crossing situation is shown in reports for the first eight months this year. Total fatalities were 1,286, a reduction of 218 compared with the first eight months of 1929; persons injured 3,393, a reduction of 693.

Big Money for Barges

The Secretary of War has approved a recommendation of Gen T. Q. Ashburn, chairman of the Inland Waterways Corporation for the expenditure of \$3,750,000 for new equipment for use on the Mississippi, Missouri and Illinois rivers, including four towboats and 50 new standard type barges.

Nearly Perfect Train Operation

The Long Island reports that for three months its passenger trains—of which in this time 85,715 regular trains were run—have made almost 100 per cent on-time records; namely, August 99.7 per cent, September 99.8 and October 99.7. During this period there were also run 7344 extra trains and 1563 express and milk trains.

Full Crew Complaints Dismissed

Complaints of violations of the Mississippi full crew law by the Southern and the New Orleans & Northeastern, which were filed on behalf of one of the train service brotherhoods, have been dismissed by the state railroad commission on the motion of George T. Mitchell, state attorney general.

The Union Pacific "Family"

The Union Pacific Family League, which is composed of employees of the Union Pacific, has issued an appeal to its members asking that each contribute

one per cent of each month's salary, for five months to provide a fund for the relief of those of its unemployed members who are experiencing financial distress.

I. C. C. Hearing on Cab Signals

The Interstate Commerce Commission has appointed a hearing, in connection with its orders requiring the use of automatic train control, to be held at Washington on December 16, before Chairman McManamy and Examiner Mullen, to discuss the petition of the Pennsylvania seeking permission to operate, over train control territory, locomotives equipped with a continuous system of four-indication cab signals, but not equipped with train-stopping apparatus.

Automobiles over Snow-Covered Mountains

The Southern Pacific on December 16 established automobile baggage-car service between Sacramento, Cal., and Reno, Nev., thus reinstating the service rendered during the winter season last year. The service is for the accommodation of automobiles through territory which is usually rendered impassable by snow during the winter. The automobiles are being carried in express cars at a rate of \$15, on condition that at least one passenger ride on the train carrying the automobile.

Extend Prepaid Ticket Plan

The Chicago & Eastern Illinois, on December 1, will extend its prepaid ticket order arrangement to include the south-east. Previous to the War prepaid arrangements could be made over all lines, but on April 1, 1920, the south-eastern lines declined to continue the arrangement. Under the prepaid ticket arrangement, a person who wishes to provide transportation for friends or relatives away from home may deposit money for the railroad fare with any of the railroad's ticket agents and an agent in the city in which the recipient lives will deliver the ticket.

Reduced Rates Appreciated

The National Drought Relief Conference at a meeting on November 20 adopted resolutions which included an expression to the railroads of the United States of "its appreciation of the very substantial contribution to the drought relief work" represented by their action in granting reduced rates on hay and feed into and livestock out of more than one thousand drought-stricken counties, and moving more than 60,000 cars on these reduced rates "at a great sacrifice of revenues and a material saving to farmers."

Former I.C.C. Examiner To Direct Parcel Post

Jess C. Harraman, for some years an examiner for the Interstate Commerce Commission, has been appointed to the position of director of parcel post in the Postoffice Department. Postmaster General Brown announced that the appointment was made with a view to the introduction of new views to the problems

of originating traffic and the collection, transportation, distribution and delivery of parcels and that one of the purposes will be the possible increased traffic from new sources "without interfering with the legitimate field of other transportation systems."

Train Limit Law Hearings Continued

Hearings on the petitions of the Atchison, Topeka & Santa Fe and the Southern Pacific to enjoin the enforcement of the Arizona train limit law which have been in progress before Joseph E. Morrison, master in chancery at San Francisco, Cal., since November 6, were adjourned in that city on November 14, and reopened at Phoenix, Ariz., on November 24. The adjournment at San Francisco represented the closing of the cases for the plaintiffs who are the two railroads. The attorney general of Arizona, K. Berry Peterson, the defendant in the cases, began the presentation of witnesses upon the resumption of the hearing at Phoenix.

New York-Washington Air Line Reduces Fares

The New York, Philadelphia & Washington Airway Corporation, which has been operating an hourly air passenger service between New York and Washington since September 1, has announced a reduction of fares, effective November 24, by which the round-trip rate between the air terminals of the two cities will be \$20. During the first 60 days of its operation the line carried approximately 10,000 passengers, on some days more than 200. C. T. Ludington, chairman of the board of the company, expressed the belief that "the day when air passenger lines can be so set up as to afford to charge even less than rail tariffs is closer at hand than experts predict."

Regional Advisory Board Meetings in December

The following regional advisory boards will hold meetings during December: The Central Western Shippers' Advisory Board on December 5 at Hastings, Neb.; the Southeast Shippers' Advisory Board on December 5 at Nashville, Tenn.; the Allegheny Regional Advisory Board on December 11 at Pittsburgh, Pa.; the Pacific Northwest Advisory Board on December 12 at Portland, Ore.; the Pacific Coast Transportation Advisory Board on December 12 at Los Angeles, Cal.; the Ohio Valley Shippers' Advisory Board on December 16 at Louisville, Ky.; the Great Lakes Regional Advisory Board on December 18 at Buffalo, N. Y.; and the Atlantic States Shippers' Advisory Board on December 19 at Washington, D. C.

Railways Experiment With Coach Fares

The Interstate Commerce Commission has granted an application filed by railroads operating between the lower Missouri river gateways and Colorado common points for authority to publish on short notice one-way second-class coach fares during the month of Decem-

ber on the basis of a maximum rate of \$13.50 in place of the \$11 fare which was applied during the period August 28 to November 30. The application stated that these second-class coach fares were established as an experiment in meeting motor coach competition with a view of determining, if possible, whether or not some of the traffic now using bus and other highway transportation agencies could be regained by the rail carriers, if low one-way coach fares were authorized; and they now wish to increase the rate in an effort to determine at just what level they can meet competition on even terms.

Postponement of Grain Rate Reduction Asked

On the ground that it has been demonstrated that it is physically impossible to complete the work of preparing the tariffs the western railroads have asked the

Bus Traffic and Your Taxes

That stout old judicial phrase "plainly right" will be written by the public across the decision of the corporation commission denying the application of freight bus lines for permits to operate between Winchester and Roanoke.

The growth of the sentiment against these lines has been extraordinary. Three years ago, nobody took them very seriously; today, nobody fails to do so.

This is not due, as far as The News Leader knows, to any effective propaganda on the part of the railroads. They have, on the contrary, been very slow to recognize the seriousness of competition by the bus lines, and they have been worse than slothful in their publicity.

The opposition to the buses has its origin, The News Leader would guess, partly in the resentment of the average motorist at the manner in which buses "hog" the road and add to the danger of driving. If you are unfortunate enough to get behind one of these buses, its bulk keeps you from seeing the road ahead of you, and you must meekly follow. You are still more unlucky if a bus gets behind you. The commanding blare of its horn, its roar and its speed make you willing to take the ditch. And when you meet a bus coming at fifty miles an hour, you feel yourself impulsively gripping your wheel and wondering if all your insurance premiums are paid. As for passing one of the new bus freight trains, it cannot be done. ***

The taxpayer is beginning to reflect, moreover, that if the profits of the railroads are destroyed, the localities will seek to make up for the consequent loss of revenue by imposing new levies on the merchant and the individual.—From the Richmond News Leader.

Interstate Commerce Commission to postpone from January 1 to April 1 the effective date of its order requiring a general revision of grain rates in the western district and for export. The effective date has been once postponed while the roads sought unsuccessfully to have the commission reconsider its order, which they said would reduce their revenues by \$20,000,000 a year. The petition said that everything possible had been done to make the necessary tariff revisions by January 1 but that it had been shown the rates could not be checked in by that time. Specific illustrations were cited to show the magnitude of the work.

Railway Wage Negotiations in Great Britain

Negotiations are now under way in Great Britain in connection with recent proposals of the railways to reduce the wages of their employees. The proposed reductions, according to recent newspaper reports, involve a general wage cut of about \$1.50 a week with a minimum wage of about \$9.50 instead of the present minimum which is equivalent to \$10.

The present situation in these wage negotiations traces back to August, 1928, when the railway employees voluntarily accepted a cut of 2½ per cent for a period of one year; it was hoped that the savings thus effected would aid the financial rehabilitation of the railways. When this agreement expired it was extended for another six months as from November, 1929, with the stipulation that upon the expiration of this extension in May, 1930, the old wage scale would be restored and that neither the railways nor the employees would call for further revision of wages until November 12, 1930. Thus with the passing of this latter date negotiations are again re-opened.

J. J. Pelley Urges Regulation of Highway Carriers

Regulation of highway transport with a view to effecting its economic co-ordination with railway service was urged by John J. Pelley, president of the New York, New Haven & Hartford, in an address before the New England Council at Boston, Mass., on November 21. With such co-ordination, Mr. Pelley said, "The public would continue to look to the railroads for its transportation, but the railroads would be the centers of general transport companies, the railways moving the heavy commodities and the long haul freight, but trucks being used when they provide a service desired by the public."

"New England has successfully met many problems that sooner or later will have to be solved by other younger sections of the country, and with the public's assistance, this co-ordinated transportation plan, so important to New England's welfare, will be worked out," Mr. Pelley added.

In discussing the general railway situation, Mr. Pelley stated that during the first eight months of 1930 the railways of New England "Showed an appreciably better record than did the railroads of the country as a whole." He stated that

the decrease in total railway revenues as compared with 1929 was 10.2 per cent in New England as against 14.2 per cent in the United States. At the same time New England railroads decreased their expenses 9.5 per cent, but little less than the 9.8 per cent decrease for the country as a whole. Thus the net railway operating income of New England roads showed a decline of but 17.3 per cent over last year, or approximately one-half the decrease of 33.2 per cent for all railroads of the country.

Kansas Governor Asks Roads to Discharge Mexicans

Clyde M. Reed, governor of Kansas, has sent a joint letter to the presidents of six railroads operating in that state—the Atchison, Topeka & Santa Fe, the Chicago, Rock Island & Pacific, the Missouri-Kansas-Texas, the Missouri Pacific, the St. Louis-San Francisco and the Union Pacific—asking that they send all Mexican laborers who may now be employed on their lines back to Mexico and replace them with Americans as a means of combating the present unemployment situation. The letter was drafted by Governor Reed following a conference with J. F. Lucey of Dallas, Tex., a representative of President Hoover, who is engaged in unemployment relief work in the Southwest. During that conference it was suggested that the contracts with Mexican railway laborers which provide for transportation to their homes upon completion of their employment should be terminated now.

Specification for Railroad Track Scales

Co-operative interests comprising the National Scale Men's Association, the National Scale and Balance Manufacturers Association, the American Railway Engineering Association, and the National Bureau of Standards have agreed upon a formal set of specifications for the manufacture and installation of railroad track scales intended for use in certain kinds of industrial service where the demand is for a scale of ultimately low installation cost combined with acceptable weighing performance and economical durability. In particular, the scale is designed as a four-section scale with a sectional capacity of 50 tons, 180,000 pounds beam capacity, and with a weigh rail length of 46 feet. These specifications have just been published as Bureau of Standards Circular No. 386. Copies may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 5 cents each.

Railway Club Meetings

The Eastern Car Foremen's Association will hold its next meeting on Friday evening, December 26, at 29 West Thirty-ninth Street, New York City. T. G. Case, Grand Central Terminal, New York City, will present a paper on the Modern Method of Car Cleaning.

The Car Foremen's Association of Omaha & Council Bluffs will hold its

next meeting on Thursday, December 11, at 2 p.m., with the C. B. & Q. at Omaha, Nebraska. M. P. Schmidt (C. M. St. P. & P.) will review the work of this association since its organization in 1912. The loading rules will also be discussed.

The Southern & Southwestern Railway Club (which meets bi-monthly) will hold its next meeting at the Ansley Hotel, Atlanta, Ga., on Thursday, January 15, beginning at 10 a.m. Roller bearings will be discussed by a representative of the Fafnir Bearings; and feedwater heaters by a representative of J. S. Coffin Company. President A. E. Clift, of the Central of Georgia, is expected also to speak.

C. P. R. Not in Politics

The Canadian Pacific is not in politics and, according to President E. W. Beatty, K. C., the railway has little, if any, political influence. Mr. Beatty so told an audience at a combined dinner of the Canadian Club and Chamber of Commerce in Hamilton, Ontario, last week.

Mr. Beatty said the company endeavored to "be a good Canadian citizen" in its extensive and varied activities, and its policy of a combination of faith in Canada, plus intelligent self-interest, had resulted in the past ten years in capital expenditure of an amount in excess of \$386,000,000.

As a taxpayer, the railway paid in 1928 a total of \$8,038,178 an increase of 484 per cent over the tax bill of 1913, when it was \$1,382,000, Mr. Beatty said.

"We have a theory as to our relations with governments which we endeavor to carry out both literally and in accordance with the spirit of it, and that theory is that the company should conduct its business with the Government of this country and the governments of the province, no matter what their political complexion may be, on a fair basis free from political intrigue or machinations.

Quebec Seeking Maritime Rate Basis

Quebec City last week began its fight before the Dominion Board of Railway Commissioners for admission into the select preserve of low freight rates set aside for the Maritime provinces on the recommendation of the Duncan Commission on economic affairs in the Maritimes, which several years ago brought about a freight rate subsidy of 20 per cent in the Maritime provinces. Before Commissioners Thomas Vien and J. A. Stoneman, representatives of the city and the Board of Trade outlined complaints of discrimination against the city in the matter of freight rates.

When the Commission adjourned the evidence was not completed and a further meeting in Quebec early in December followed by hearings in Saint John, Halifax, and possibly other maritime points, will be necessary before the case is completed.

Before the case proceeded J. A. Walker, representing the Halifax Harbor Commission, the Halifax Board of Trade and the Transportation Committee of the Maritime Provinces Board of Trade,

objected to the hearing and questioned the jurisdiction of the Board to inquire into any matter connected with the Maritime Freight Rates Act. He was overruled by Commissioner Thomas Vien and a similar objection on behalf of the city of Levis was also turned down.

Mr. Walker cited a section in that act which states the rates provided in the select area cannot be adduced as arguments in connection with the fixing of rates outside the area. The present hearing, Mr. Vien ruled, was not for the purpose of fixing rates, but to inquire into complaints which the Government had received from the city of Quebec. The board could not alter the act, but since the matter was referred to it under an order-in-council, it could advise the Government on the alleged grievances of Quebec.

All through the hearing it was insisted on the part of Quebec witnesses that the proposed extension of the select area would have no injurious but rather beneficial effects on the trade of the Maritime Provinces. It was contended Quebec merely wished the correction of a local situation which worked a hardship. The Maritime Freight Rates Act provides that on all domestic traffic in the prescribed area the normal freight rates should be reduced by 20 per cent. The westerly boundary of the area is the city of Levis directly across the river from Quebec.

In order to take advantage of the special rate, Quebec manufacturers and wholesalers, it was stated, had to ship their goods by ferry across the river to Levis and reship from there for points in eastern Quebec south of the St. Lawrence river and for the Maritimes. The cost of this operation meant either reduced profits for the seller or higher prices for the consumer. If Quebec were in the select area goods could be shipped direct to points east by way of the Quebec bridge without this additional cost.

National Industrial Traffic League

The National Industrial Traffic League held its annual meeting in New York City on November 20 and 21. The principal feature of the business done was the consideration and final adoption of a resolution directing the president to at once appoint a special committee to study the present work and activities of the league, and to make a report thereon. A second resolution, containing various instructions to this committee was voted down.

The league took action calling for the simplification of Section 15a of the Transportation Act and expressing the view that legislation regulating the operation of motor trucks on the highways is not called for at the present time. Approval was given to a report recommending legislation to relieve the Interstate Commerce Commission from the regulation of telephone, telegraph and radio companies. The league approved the proposal of the executive committee to protest clauses 6 and 9 of the A. R. A. Manual with respect to leases of side tracks; it

was held not desirable to have a uniform side track agreement.

The Committee on Aeronautics, R. J. Dellinger, chairman, presented a report reviewing the situation in airplane transportation up to date.

W. H. Day, was re-elected president, Herman Mueller, vice-president and R. W. Campbell, treasurer.

Rate Division Order Sustained

The Supreme Court of the United States, in an opinion by Justice Butler rendered on November 24, affirmed the decision of the district court for the western district of Missouri sustaining the validity of an order issued by the Interstate Commerce Commission on June 10, 1929, revising the divisions of through freight rates as between the southwestern railroads and those in western trunk line territory on a basis estimated to give the western trunk lines an increase of about \$3,000,000 a year in revenues. The southwestern roads had challenged the validity of the order on the ground that the commission had not taken individual rates sufficiently into consideration but had used a general group basis. As to this the court held that the commission need not under all circumstances take specific evidence as to each rate of every carrier and that the evidence before the commission was sufficient to furnish an adequate and reasonable basis for the proper division of each of the joint rates applicable to the traffic involved, but it criticized the failure of the commission specifically to report the facts and give the reasons for its conclusions.

Christmas Message From the Safety Section

L. G. Bentley, chairman of the Committee on Education of the Safety Section, A. R. A., issues, for the month of December, a brief message containing few statistics but calling upon all hands to keep constantly "safety-minded." This circular is addressed not only to officers and employees but to railway owners as well. Safety-mindedness is the only proper attitude in railroad work. The circular takes the shape of a Christmas message and the reader is reminded that this attitude is essential to complete realization of "Peace on Earth, Among Men Good-Will."

The circular condenses the results of seven and a half years by presenting a statement of the rates per million man hours, of all accidents to railway employees on duty reported to the Interstate Commerce Commission. This statement shows:

Year	Rate	Year	Rate
1923	30.89	1927	19.36
1924	27.34	1928	16.21
1925	26.10	1929	13.84
1926	23.86	1930 (first six months)	9.87

The poster prepared by the committee designed to depict the peace-good-will-and-safety feelings of railroad men, shows the Star in the East. It appears, not to an oriental shepherd, watching in the field by night, but to an up-to-date American brakeman, in a modern yard.

Foreign Railways

Automatic Train Control in Great Britain

The Great Western Railway of Great Britain—the only road in the British Isles, except the London underground lines, on which automatic train control is in use—has adopted plans for extending the use of its cab signal and automatic train control by the expenditure of £208,000. Supplementing the brief announcement of this fact in the *Railway Age* of October 25, page 873, there is presented herewith a sketch map showing the lines on which automatic train control is already in use and those which are to be equipped under the plans now announced. With the completion of these plans the total length of track equipped will be 2,130 miles and the number of locomotives equipped 2,334.

This system of protection has been gradually extended since it was first adopted, about 30 years ago, on the Henley branch. The extension to Swindon and Oxford was completed in 1929.

In this system the engine apparatus is actuated by a contact shoe fixed to a vertical member beneath the cab, which makes mechanical and electrical contact with a longitudinal steel inverted T-bar, fixed between the rails of the track and standing 4 in. above rail level. The contact shoe on the locomotive projects downward to within 2½ in. of the rail level, being lifted 1½ in. at each ramp. When the caution signal is set against the train the motion of the contact shoe upward causes the sounding of a whistle in the cab; while if the caution signal is clear, the electrical contact with the ramp causes the ringing of a bell.

THE CANADIAN PACIFIC has acquired a site for a hotel in London, England, and preliminary plans are already being prepared. The site faces Berkeley Square and Bruton street, and it is proposed to put up a building of 600 to 700 rooms.

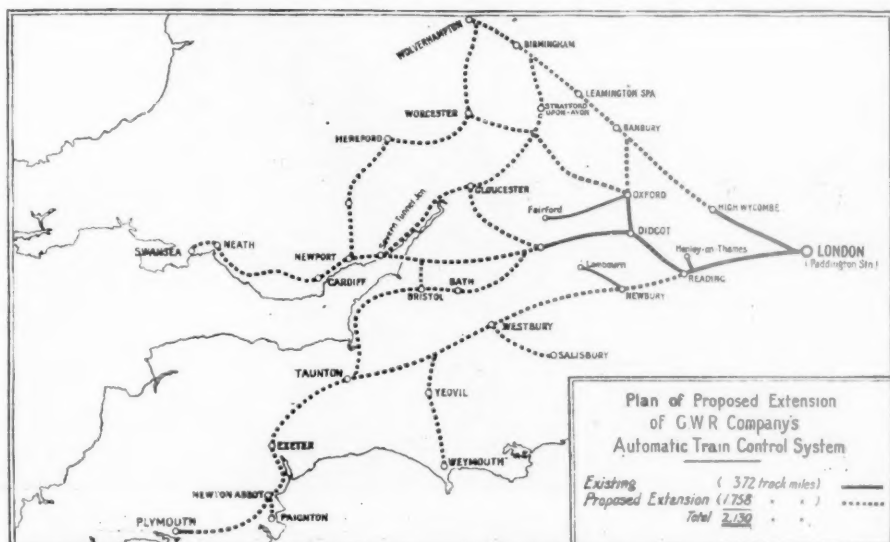
Nigerian Railway Results, 1929-1930

Operations of the Nigerian Railway for the fiscal year ending March 31, 1930, resulted in a net profit of £1,036,945 (\$5,039,553), equivalent to a return of 5.25 per cent on the invested capital, as compared to a net profit of £928,969 (\$4,514,789), or 5.03 per cent on capital, for the preceding twelve months, according to the annual report of the general manager. The more successful showing was mainly due to a reduction in the operating ratio from 63.25 in 1928-1929 to 61.49 in 1929-1930.

The number of passengers carried increased by 698,427, to a total of 3,851,060, creating a new high record in this respect, chiefly as a result of extended suburban services, which are steadily becoming a more important feature of the Nigerian system's operation. The fact that most of the journeys were for short distances is borne out by the small increase—£8,454, or \$41,086—in passenger revenue, which totaled £398,490, or \$1,936,661. The average revenue per passenger was about 50 cents and the average journey 41 miles.

Freight traffic decreased slightly, to 929,608 tons, but freight revenue amounted to £1,852,032 (\$9,000,876), an increase of £187,661 (\$912,032). Train mileage increased by 12.4 per cent, locomotive mileage by 10.7 per cent, and length of average haul by 21 miles, but the average train load (102 tons) showed a decrease of 21 tons.

Experiments with locomotive boosters conducted during the year showed that the booster increased the capacity of the average freight locomotive by more than 20 per cent, raising the possible train load from 460 to 570 tons. Changes were also made during the year in grading, methods of training, and educational ratings of native train and engine service employees.



Extensive Use of Automatic Train Control on Great Western of Great Britain

Equipment and Supplies

Locomotives

THE NEW YORK CENTRAL is asking for bids on December 9, for 50 new 4-6-4 (Hudson J 1-C) type locomotives, for the New York Central Lines.

THE CHICAGO & ILLINOIS MIDLAND has ordered two 2-10-2 type locomotives from the Lima Locomotive Works. Inquiry for this equipment was reported in the *Railway Age* of October 25.

Freight Cars

THE SANITARY DISTRICT OF CHICAGO is inquiring for 25 dump cars.

THE CHICAGO GREAT WESTERN has ordered 300 hopper bottom coal cars of 70 tons' capacity from the Pullman Car & Manufacturing Corporation.

STANDARD REFRIGERATOR CAR COMPANY has ordered 45 refrigerator cars of 40 tons' capacity, to have steel underframes and wood superstructures, from the English Car & Manufacturing Company.

THE NORTHERN PACIFIC will immediately start a car rebuilding program which involves 3,000 freight cars and an expenditure of \$4,500,000. The program includes the rebuilding of 1,000 refrigerator cars and 1,000 box cars, and the conversion of 500 coal cars into box

cars and 500 box cars into livestock cars. The material which will be required to rebuild the cars includes 25,000 tons of fabricated steel, 18,000 ft. of lumber, 2,700 tons of iron and steel castings, 3,000 tons of steel forgings and 6,000,000 sq. ft. of insulating material.

Passenger Cars

THE PHILADELPHIA & WESTERN is inquiring for 12 interurban cars.

Iron and Steel

THE WABASH is inquiring for 10,000 tons of rails.

THE LOUISVILLE & NASHVILLE is inquiring for 80,000 tons of rails.

THE CANADIAN PACIFIC has received bids on 1,200 tons of steel for bridges in Maine.

THE BALTIMORE & OHIO has received bids on 200 tons of steel for bridge repairs in Chicago.

THE NORTHERN PACIFIC has ordered 1,100 tons of tie plates from the Pacific Coast Steel Company.

THE ILLINOIS CENTRAL has ordered 720 tons of structural steel for a viaduct and station at Randolph street, Chicago, from the American Bridge Company.

THE NEW YORK CENTRAL has received bids on 14,000 tons of steel for the express highway on the West side of New York City between Fifty-ninth and Seventy-second streets.

* * *



Along the White River Division of the Missouri Pacific in the Ozark Mountains, Near Bergman, Ark.

Supply Trade

Joseph T. Ryerson & Sons, Inc., has acquired the stock and good will of the sheet metal division of the Richards Company, Inc., Boston, Mass.

The Cleveland Pneumatic Tool Company, Cleveland, Ohio, has moved its Philadelphia office from the Bourse building to the Terminal Commerce building.

R. W. Thompson, advertising manager and manager of cut nail sales of the Reading Iron Company, and manager of sales for the Stoyestown Coal Mine, a subsidiary, has been appointed also director of public relations; Harold S. Bard, for seven years a salesman of the former company with headquarters in the New York district, has been appointed district sales representative, with office at 1714 Engineering building, Chicago, succeeding R. A. Griffin, resigned. A. M. Cullum, oil country sales manager at Tulsa, Okla., has resigned to become associated with the Harbison-Walker Refractories Company, Pittsburgh, Pa.

Presly Neville Guthrie, Jr., who has been elected president of the Reading Iron Company, Reading, Pa., was born on April 26, 1876, at Pittsburgh, Pa.,



Presly Neville Guthrie, Jr.

where he attended public and private schools. He began work in the employ of Park Brothers & Company, Pittsburgh, Pa., who owned and operated the Black Diamond Steel Works. He later served consecutively with the Philadelphia Company of Pittsburgh and was superintendent of the Hornell Gas Light Company, Hornell, N. Y., then as general manager of Chemung County Gas Company, Elmira, N. Y. He has had considerable experience in the management and operation of natural gas utilities in five of the eastern states in this country. Mr. Guthrie returned to the iron and steel business and served for several years as sales agent and general manager of sales for the

Longmead Iron Company, Conshohocken, Pa., manufacturers of wrought iron pipe. In 1909 he went to the South Chester Tube Company, Chester, Pa., in charge of sales. He was granted leave of absence in July, 1917, and entered the government service as assistant director, Bureau of Oil Well Supplies, Oil Division, United States Fuel Administration and in February, 1919, at the end of the war, returned to the South Chester Tube Company as manager of sales from which position he resigned in December, 1928, to become vice-president in charge of sales of the Reading Iron Company and now, by his recent election, becomes president of the same company.

Canadian Car & Foundry Company

Consolidated profit of \$2,843,119.52, before allowance for income tax deductions, was reported by the Canadian Car & Foundry Company, Ltd., for the year ending September 30. The consolidated balance sheet at the close of the fiscal year showed current assets of \$8,170,375 as against current liabilities of \$996,523, or an excess of \$7,173,853 in current assets.

The consolidated statement of surplus and profits as published in the annual report follows:

Combined Profits for the Fiscal Year ending September 30, 1930.....	\$3,104,868
ADD:	
Interest earned (net).....	\$143,011
Less: Interest on Bonds.....	2,759
	140,252
	\$3,245,120
LESS:	
Provision for Depreciation.....	402,000
Profit for the Fiscal Year subject to Income Tax.....	2,843,120
Surplus at September 30, 1929.....	5,030,796
	\$7,873,915
DEDUCT:	
Provision for Income Tax and General Purposes.....	250,000
	\$7,623,915
DEDUCT:	
Dividends Declared:	
\$1.75 per share on Preference Stock	\$525,000
\$1.75 per share on Ordinary Stock	640,150
	1,165,150
SURPLUS carried forward September 30, 1930	\$6,458,765

Obituary

Henry Harnischfeger, president of the Harnischfeger Corporation, Milwaukee, Wis., died on November 15th.

Trade Publication

WHAT PORTABLES DO.—An attractive, well-illustrated catalog of 32 pages has been issued by the Ingersoll-Rand Company, New York City. It is designed specifically to show the wide use of Ingersoll-Rand portable pneumatic equipment in recent construction and maintenance work. The catalogue also includes essential details of the Ingersoll-Rand Type-20 portable, gasoline-engine-driven compressors.

Construction

ALAMEDA BELT LINE.—The Interstate Commerce Commission has extended to December 31 the time within which this company must complete its extension of the Shore Line to San Francisco bay.

CHARLESTON & WESTERN CAROLINA.—This company and/or the Carolina, Clinchfield & Ohio have been authorized to build a 2-mile connecting line in Spartanburg, S. C.; estimated cost, \$600,000.

CHESAPEAKE & OHIO.—A contract totaling \$1,084,000 has been awarded to Carpenter, Major Bros. Company, Inc., Clifton Forge, Va., for the enlargement and double tracking of Stretchers Neck tunnel, at Prince, W. Va., a project which was recently authorized by this company. Additional contracts have been awarded to the Walton Construction Company of Roanoke, Va., for the enlargement of White Sulphur tunnel, White Sulphur, W. Va., at a cost of about \$118,500, and to W. P. Thurston Company, Inc., Richmond, Va., for the extension of six stalls of a roundhouse at Handley, W. Va., at a cost of \$46,287.

DELAWARE, LACKAWANNA & WESTERN.—Following the granting, by the Public Service Commission of New York, of permission for the Cortlandt County Traction Company to abandon its electric trolley line in and near the village of McGrawville, N. Y., the Delaware, Lackawanna & Western has been authorized by the Commission to construct additional sidings and industrial tracks in, through and across Center, South and Elm streets, McGrawville, to serve those shippers formerly reached by the traction company. The railroad will begin work at once, and, following its completion, is to restore the roadway and sidewalks over which the new tracks are to be constructed.

NATIONAL OF MEXICO.—All construction work on the Short Line Railroad, a part of this system, which was projected to extend between Tamos, Ver. C., near Tampico, Tam., and Honey, Hgo., near Mexico, D. F., about 150 miles, has been indefinitely suspended because of lack of funds. Approximately 50 miles of the line have been constructed and it is planned to proceed with the completion of the bridge over the Panuco river just south of Tamos on the completed section of the line.

NEW YORK CENTRAL.—The New York Public Service Commission has approved final specifications and an estimate of cost amounting to \$164,934 for the reconstruction of the bridges carrying Lake avenue boulevard over this company's Ontario branch in Rochester, N. Y.

NEW YORK CENTRAL.—The Public Service Commission of New York has notified this company that it does not

consider excessive the bid of the Bates & Rogers Construction Company, New York, for the elimination of a grade crossing on the Echo Lake-Pines Bridge county highway, New Castle, N. Y. The proposal of the Bates & Rogers Company, \$58,825, was the lowest of 15 bids received. The commission has also approved an estimate of \$37,800 for land required in connection with the elimination of the Jackson avenue crossing of the New York Central in Hastings-on-Hudson, N. Y.

NEW YORK CENTRAL-LEHIGH VALLEY.—The Public Service Commission of New York has added to its list of grade crossings to be considered for elimination during 1930 the South Jackson street crossing of the Lehigh Valley in Batavia, N. Y., a project which is estimated to cost about \$200,000, of which the railroad company will pay \$100,000. This action by the commission permits the elimination of the South Jackson street crossing to be considered at a hearing scheduled for December 5, when elimination of eight New York Central crossings in Batavia will also be considered. In connection with the elimination of these crossings, the New York Central has submitted a plan which involves a relocation of its line to the south of the city adjacent to the present right-of-way of the Lehigh Valley, and close enough to that company's tracks to make it desirable to include the South Jackson street separation as a part of the general project.

NEW YORK CENTRAL-NEW YORK, CHICAGO & ST. LOUIS-PENNSYLVANIA-BUFFALO & ERIE.—The Public Service Commission of New York has designated for elimination the grade crossings of the tracks of these four companies and Pikes road, all located about 1½ miles east of Angola station, Evans, N. Y. The crossings are to be eliminated by carrying the highway under the railroads at an estimated total cost of approximately \$328,000.

PENNSYLVANIA.—This company has recently awarded to Gibbs & Hill, Inc., of New York City, a contract amounting to \$96,000 for the construction of a multiple duct underground conduit system between sub-station No. 4, Kearny Junction, N. J., and Woodside avenue, Sunnyside Yard, Long Island, N. Y. In connection with grade separation work at various points on the Pennsylvania system, contracts have been awarded to the Bates & Rogers Construction Company, Cleveland, Ohio, for the construction of an overhead bridge, approaches and connecting roads at Castile road, Portageville, N. Y., at a cost of about \$81,000, and to Hoeffler & Company, Chicago, for bridge and street work, to cost approximately \$29,000, in connection with the separation of grades of West Eighty-Third street and the tracks of the Pittsburgh, Cincinnati, Chicago & St. Louis, a subsidiary, at Chicago.

PENNSYLVANIA.—This company will begin work next week on the lowering of its tracks in the north tube under the Hudson river, through which all its passenger trains are routed westbound out of New

York. The work, which involves a total expenditure of more than \$100,000, is being done to make room above the trains for the locomotive pantographs and overhead wires to be used when the lines between Sunnyside Yard, L. I., and Manhattan Transfer, N. J., are changed from direct to alternating current to conform with the new electrification now under way between New York, Philadelphia, Pa., and Washington, D. C. Electric locomotives now operating through the tubes take their current from the third rail. Ballast and tracks are being removed and the tracks replaced at lower levels in the off-hours of the early morning, all the work being carried on within the tunnel. It is expected that the entire project will be completed before next summer and prior to the time when the new alternating current operation is placed in service in the New York terminal area.

The tracks already have been successfully lowered in the south tube under the Hudson, carrying eastbound Pennsylvania trains into New York, as well as in the four tubes under the East river. When the work is completed more than five miles of tunnel trackage will have been lowered from two to three inches without disturbing passenger traffic using the tubes.

RUTLAND.—The Public Service Commission of New York has granted a petition of the State Department of Public Works and ordered a change in the bridge carrying this company's line over the Chateaugay-Clinton county line state highway, Chateaugay, N. Y. The existing underpass at this point is to be closed and replaced by a wider under-crossing about 825 ft. west of the present structure, at an estimated construction cost of \$87,400.

INDIANAPOLIS UNION.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue \$1,000,000 of refunding and improvement mortgage, 4½ per cent, series A, bonds to be offered for sale at competitive bidding and sold to the highest bidder. The Pennsylvania, the New York Central and the Big Four have been authorized to assume liability for this issue. The requirement for competitive bidding on these bonds is dealt with in great detail in an article entitled "I. C. C. Requires Bonds Be Sold to Highest Bidder," which appears elsewhere in this issue.

MISSOURI PACIFIC.—*Common Stock Proposal Withdrawn.*—This company has asked leave to withdraw and the Interstate Commerce Commission has accordingly dismissed its application for authority to issue \$38,659,000 of additional common stock for the purpose of providing for the payment of the accrued dividends on its preferred stock. Examiner Devoe, in a proposed report, had recommended that the commission authorize the issuance of \$34,700,000 of the stock, but later the company asked for an extension of time to consider the matter and Herbert Fitzpatrick, general counsel, recently advised the commission that it desired to withdraw the plan, because of changed business and financial conditions, without prejudice to its renewal or the filling of some modified or different plan for the payment of the preferred dividends. The application had been filed before the Van Sweringen interests had acquired control of the Missouri Pacific.

Railway Finance

ALABAMA GREAT SOUTHERN.—*Extra Dividend.*—This company has declared a special extra dividend of \$6 per share on its preferred and common stock, in addition to the customary semi-annual dividend of \$2 regular and \$1.50 special on each of the stocks. The A. G. S. was the beneficiary of an extra dividend of \$50 by the Cincinnati, New Orleans & Texas Pacific in which it has large holdings.

ATCHISON, TOPEKA & SANTA FE.—*Trackage Rights.*—The Interstate Commerce Commission has authorized this company to operate under trackage rights over a short section of the Peoria & Pekin Union at Pekin, Ill.

BALTIMORE & OHIO.—*Stock.*—The Baltimore & Ohio of Pennsylvania has been authorized by the Interstate Commerce Commission to issue \$95,012 of capital stock in exchange, par for par, for the shares of the Pittsburgh & Connellsville and the Mt. Pleasant & Broad Ford.

CHARLESTON & WESTERN CAROLINA AND CAROLINA, CLINCHFIELD & OHIO.—*Construction and Operation.*—These two companies, or either of them, have been authorized to construct a connecting track between the C. & W. C. and the C. C. & O. in Spartanburg, S. C., 2 miles, and the two roads, the Atlantic Coast Line and the Louisville & Nashville, have been authorized to operate over this line. The estimated cost of the project is \$600,000.

CHICAGO & NORTH WESTERN.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its so-called Moingona line, in Boone county, Ia., 9 miles.

CHICAGO & NORTH WESTERN.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon certain tracks extending from the main line of the Southern Illinois

division northward to Girard, Ill., 4.5 miles of track being involved.

CHICAGO & NORTH WESTERN.—*Dividend.*—The directors of this company have declared a dividend of 25 cents a share on the common stock of the company instead of the customary \$1.25 quarterly rate established last December. This places the stock on a \$4.00 per annum basis instead of the \$5.00 established last year.

CHICAGO, ROCK ISLAND & PACIFIC.—*Abandonment.*—This company and the St. Paul & Kansas City Short Line have been authorized to abandon a portion of a branch line extending to Olmitz Mine No. 2 in Lucas County, Ia., 5.7 miles.

DENVER, INTERMOUNTAIN & SUMMIT.—*Articles of Incorporation.*—Articles of incorporation have been filed with the Secretary of Colorado for the Denver, Intermountain & Summit Railway Company, which plans to take over the Denver-Leadville narrow gage line, the Denver-Morrison branch and the narrow gage branch from South Park Junction to the Denver Union stockyards of the Colorado & Southern. Last year the Colorado & Southern's application for permission to abandon and dismantle the South Park line was denied by the Interstate Commerce Commission and the railroad was ordered to continue operating the branch for a three-year trial period. Recently the railroad company filed an application with the Public Utilities Commission of Colorado, asking for permission to abandon all passenger service on the Leadville line and to reduce freight service. A hearing on the application was started and continued until later this month. When the new company secures control of the line, it will ask for dismissal of the application. Those interested in the new company plan to develop bituminous coal deposits at Como, sulphate deposits and lumbering.

NEW YORK CENTRAL.—*Control of Lansing Manufacturers R.R.*—The Interstate Commerce Commission has authorized this company and the Michigan Central to lease the Lansing Manufacturers R.R. for the term in which the M. C. shall continue to be leased by the New York Central, i.e., 99 years.

NORTHSIDE BELT.—*Operation.*—This company, which has a line of about 5 miles connecting with the Houston, Tex., Municipal Harbor Belt line, has applied to the Interstate Commerce Commission for authority to operate in interstate commerce.

PITTSBURGH & WEST VIRGINIA.—*Construction and Operation.*—The Interstate Commerce Commission has authorized this company to operate under a trackage agreement over a short section of the line of the Pittsburgh, McKeesport & Youghiogeny in Connellsville, Pa., and to relocate a portion of its authorized line, 7 miles in length, approaching Connellsville.

ST. LOUIS-SAN FRANCISCO.—*Asks Modification of Consolidation Plan.*—This company has filed with the Interstate Commerce Commission a motion asking a modification of the commission's consolidation plan by transfer of the St. Louis Southwestern and the St. L. S. W. of Texas from System No. 10—Illinois Central, to System No. 19—Rock Island-

Frisco. The Frisco has appeared in opposition to the application of the Southern Pacific for authority to acquire the St. L. S. W. for its system.

SOUTHERN PACIFIC.—Acquisition.—The Interstate Commerce Commission has denied the application of this company and the Central Pacific for authority to acquire the line of the Union Belt of Oakland at the proposed purchase price of the property.

TWIN CITY.—Operation.—This company has applied to the Interstate Commerce Commission for a certificate authorizing it to operate in interstate commerce a line from Chehalis to Centralia, Wash., 5 miles, with a branch of 1.56 miles.

WARRIOR RIVER TERMINAL COMPANY.—Stock.—This company has applied to the Interstate Commerce Commission for authority to issue \$1,150,000 of additional capital stock to the Inland Waterways Corporation to pay its indebtedness to that corporation for advances, including accrued interest thereon.

Average Prices of Stocks and of Bonds

	Nov. 25	Last week	Last year
Average price of 20 representative railway stocks.	93.48	91.94	128.50
Average price of 20 representative railway bonds..	93.08	93.34	92.32

Dividends Declared

Alabama Great Southern.—Ordinary, \$2.00; Ordinary Extra, \$1.50; Ordinary Special, \$6.00, all payable December 30 to holders of record December 1; Preferred, \$2.00; Preferred Extra, \$1.50, both payable February 13 to holders of record January 9; Preferred Special, \$6.00, payable December 30 to holders of record December 1.

Atlantic Coast Line.—Common, \$3.50; Common Extra, \$1.50, both payable January 10 to holders of record December 12.

Boston & Albany.—2¼ per cent, quarterly, payable December 31 to holders of record November 29.

Chestnut Hill.—\$.75, quarterly, payable December 4 to holders of record November 21 to December 3.

Cincinnati, New Orleans & Texas Pacific.—Common, 4 per cent; Common Extra, 50 per cent, both payable December 26 to holders of record December 5.

Consolidated R.R. of Cuba.—Preferred, \$1.50, quarterly, payable January 2 to holders of record December 10.

Cuba R.R.—Common, \$1.20, payable December 29 to holders of record December 29.

Delaware & Bound Brook.—2 per cent, quarterly, payable November 20 to holders of record November 19.

Gulf, Mobile & Northern.—Preferred, 1½ per cent, quarterly, payable January 2 to holders of record December 20.

New York, New Haven & Hartford.—Common, 1½ per cent, quarterly; Preferred, 1¾ per cent, quarterly, both payable January 2 to holders of record December 5.

Philadelphia, Germantown & Norristown.—\$1.50, quarterly, payable December 4 to holders of record December 3.

Southern Pacific.—1½ per cent, quarterly, payable January 2 to holders of record November 28.

INAUGURATION OF A NEW NON-STOP TRAIN between King's Cross (London) and Aberdeen (Scotland) early in 1931 is now planned by the London & North Eastern of Great Britain, according to recent Commerce Department reports. The distance between the two cities, 523 miles, will exceed by 131 miles the longest non-stop service now in operation, that between King's Cross and Edinburgh (Scotland).

Railway Officers

Executive

Frank J. Wall, who will, effective December 1, undertake the duties of vice-president in charge of traffic of the New York, New Haven & Hartford, succeeding **Benjamin Campbell**, retiring, as announced in *Railway Age* of November 15, page 1063, was born at Hartford, Conn., on May 8, 1886, and received his higher education at Yale University. He



Frank J. Wall

started his railroad career as a yard clerk at New Haven during the summer, while still attending high school. On leaving college he secured a position in the freight agent's office at New Haven and soon afterwards was transferred to the New England Steamship Company, working on that company's boats as checker. In 1912, he was promoted to



Benjamin Campbell

agent of the New Bedford, Martha's Vineyard & Nantucket Steamboat Company at New Bedford, Mass. In 1916, he was advanced to superintendent of that line. In 1920, Mr. Wall was transferred to New York, where he became assistant to vice-president of operation of the New England Steamship Company, and in July, 1929, he was transferred to New Haven as assistant to vice-president Campbell.

Mr. Campbell was born on June 10, 1858, at Liberty, Ind. He entered railway service in 1875, as telegraph operator with the Cairo & Vincennes (now part of the Cleveland, Cincinnati, Chicago & St. Louis). From 1876 to 1884 he was consecutively operator, station agent, traveling freight agent and general agent of the Minneapolis, St. Paul & Sioux City (now the Chicago, St. Paul, Minneapolis & Omaha). From 1884 to 1886 he was general agent of the Union Pacific at Portland, Ore., and on the latter date he entered the service of the Oregon Railway & Navigation Company (now the Oregon-Washington R. R. & Navigation Company) as general freight agent. He was promoted to traffic manager of that company in 1894. In March, 1902, he undertook the position of assistant traffic director of the Southern Pacific and Union Pacific systems at Chicago. From January, 1905, to May, 1907, he served as fourth vice-president of the Great Northern. In May, 1907, he became connected with the New York, New Haven & Hartford in the capacity of vice-president in charge of traffic.

Operating

W. H. Edwards will, effective December 1, relinquish his duties as cost engineer of the Baltimore & Ohio to become general superintendent of the Lehigh & New England, with headquarters at Bethlehem, Pa., succeeding **Charles W. Brown**, who was recently appointed general manager of the Western Maryland, as announced in *Railway Age* of November 15, page 1063.

Frank L. Foster, who was recently appointed superintendent of freight transportation of the Pittsburgh & Lake Erie and the Lake Erie & Eastern, with headquarters at Pittsburgh, Pa., as announced in *Railway Age* of November 8, page 1013, was born at McDonald, Pa., on October 7, 1888, and was educated in the public schools. He entered rail-



Frank L. Foster

road service with the Pittsburgh & Lake Erie on July 24, 1905, as a clerk. From December, 1917, to June, 1928, he served as chief clerk and on the latter date he was advanced to assistant superintendent freight transportation, which position he

relinquished on November 1 to become superintendent freight transportation.

A. E. Lloyd, assistant to vice-president in charge of operation of the New York Central, has been appointed general superintendent of the New York terminal district, including the marine department, succeeding **Frederick N. Melius**, who was recently elected president of the United States Freight Company and the Universal Carloading & Distributing Company, a subsidiary, as announced in *Railway Age* of November 22, page 1113. **A. H. Wright** and **J. E. Davenport** have been appointed assistants to the general superintendent.

Charles E. Brooks, superintendent of the Montana division of the Oregon Short Line, with headquarters at Pocatello, Idaho, will retire under the pension rules of the company on December 1. Following Mr. Brooks' retirement, the Montana division will be abolished on the same date. The Utah division, of which **A. L. Coey** is superintendent, with headquarters at Pocatello, has been extended to include the main line and branches between Pocatello and Butte, Mont. The Idaho division, of which **E. C. Manson** is superintendent, with headquarters at Pocatello, has been extended to include the main line and branches between, and including, Pocatello and Granger, Wyo., which have been a part of the Utah division.

Mr. Brooks has been connected with the Oregon Short Line for more than 40 years, starting as a boilermaker helper in July, 1890. He was born at Chambersburg, Ill., on October 2, 1870. His early railway experience included service as a yard clerk, clerk to trainmaster and to assistant superintendent, chief clerk to supervisor bridges and buildings, chief clerk to division superintendent, freight and passenger agent at Pocatello, office assistant to the superintendent and trainmaster. In 1913, Mr. Brooks was appointed acting superintendent of the Montana division of the Oregon Short Line, then becoming assistant division superintendent at Nampa, Idaho, in the following year. In 1917 he was promoted to superintendent of the Montana division, and in 1922 he was transferred to the Utah division, where he remained until October, 1928, when he was transferred back to the Montana division.

Mechanical

Robert Hunt, who was recently appointed assistant general superintendent, motive power, of the Seaboard Air Line, with headquarters at Norfolk, Va., was born at Manchester, England, on February 16, 1888. Mr. Hunt received his education at the Manchester high school and from 1903 to 1909 attended evening classes at the Manchester Technical College. He entered railroad service with the Great Central Railway (now part of the London, Midland & Scottish), as apprentice draftsman. In 1909 he entered the service of the Atlantic Coast Line, remaining with that company until 1918, and holding the

positions of draftsman and chief draftsman successively during that period. He became connected with the Seaboard Air Line in 1918 and served as chief draftsman until 1920, when he was advanced to mechanical engineer, which



Robert Hunt

position was abolished at the time of Mr. Hunt's recent promotion to assistant general superintendent, motive power.

Traffic

Effective December 1, **E. R. Bardgett** will assume the position of general traffic manager of the Western Maryland; headquarters at Baltimore, Md.

Purchases and Stores

Thomas A. Donovan, who was recently appointed purchasing agent of the Canadian Pacific at St. John, N. B., as announced in *Railway Age* of November 15, page 1064, was born at Canterbury, N. B., on August 3, 1897, and received his higher education at St. Joseph's University. Mr. Donovan began his railway career with the Canadian Pacific in 1912, as office boy in the purchasing department at Calgary, Alta. He held various positions in that department until 1918, when he was promoted to chief clerk. On November 1, 1928, he was transferred to a similar position in the purchasing department at Montreal, Que., in which capacity he served until his recent appointment, on November 15, as purchasing agent at St. John.

Obituary

Walter James Towne, chief engineer of the Chicago & North Western, with headquarters at Chicago, died at his home in Oak Park, Ill., on November 23 from pneumonia.

Joseph A. Kemp, former president of the Wichita Falls Route, made up of the Wichita Falls & Northwestern, the Wichita Falls & Southern and the Wichita Falls, with headquarters at Wichita Falls, Tex., died in a hospital at Austin, Tex., on November 16 at the age of 69 years. Mr. Kemp served for

various periods from 1895 to 1913 as general manager and president of the short lines which made up the Wichita Falls Route. When the several roads were leased by the Missouri-Kansas-Texas in 1913, he became vice-president of the Wichita Falls & Northwestern, retaining that position until 1917.

Edgar Van Etten, former vice-president of the New York Central & Hudson River (now the New York Central) and a number of short line railroads, who died at Sacramento, Cal., on November 18, had been a railway employee and officer for more than 60 years. He was born at Milford, Pa., on April 15, 1843, and graduated from the Stillwater (N. J.) Academy in 1858. He served for three years during the Civil war, attaining the rank of captain, and then entered railway service as a freight brakeman. From 1864 to 1884 he served in various capacities on a number of eastern railroads, including that of chief train dispatcher on the New York, Lake Erie & Western (now the Erie). He was then successively division superintendent on the latter road at Port Jervis, N. Y., and Buffalo, division superintendent on the Rome, Watertown & Ogdensburg (now part of the New York Central), manager of the Buffalo Car Service Association, division superintendent on the Lehigh Valley and general superintendent of the New York Central & Hudson River and the R., W. & O. From 1901 to 1910, Mr. Van Etten was vice-president of the New York Central & Hudson River in charge of the Boston & Albany, and he was then elected general manager of the Ludlow & Southern. He was vice-president of the Chesapeake Western from 1915 to 1926.

E. O. Thedens, master car builder of the Chicago & Illinois Midland, with headquarters at Taylorville, Ill., who died on November 9, was born in 1886. He gained his first experience in the construction of cars as a mechanic's helper in the wood erecting shop of the Illinois Car & Equipment Company (now the Pressed Steel Car Company) at Chicago, in July 1900. During the following five years with that company he served as a mechanic, a timekeeper and a labor cost accountant. From 1904 to 1911 he obtained experience in open-hearth furnace work in the steel mill of the Grand Crossing Tack Company at Chicago, and also served as a millwright and car builder in the plants of a number of car manufacturers and railroads. In 1911, Mr. Thedens was appointed assistant general storekeeper of the Ryan Car Company and in the following year became general car foreman of the Illinois Car & Equipment Company at Hammond, Ind., then serving for a time with the Haskell & Barker Car Company. When the latter company was taken over by the Pullman Car & Manufacturing Corporation he remained in the latter's service filling a number of positions in the sales and production departments. Mr. Thedens was appointed master car builder of the C. & I. M. in October, 1926, which position he held until his death.